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Midstate Substation to State Rec Road Transmission Line and Forest Plan Amendments Draft Environmental Assessment

**Bend-Fort Rock Ranger District
Deschutes National Forest
Deschutes County, Oregon**

Township 21 South, Range 11 East, Sections, 8, 17, 20, 29, 32
Township 22 South, Range 11 East, Sections 5, 7, 8, 17, 18,
Willamette Meridian

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COMMONLY USED ACRONYMS

Acronyms	
BBC	Birds of Conservation Concern
BE	Biological Evaluation
BMP	Best Management Practices
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CWD	Coarse Woody Debris
DNF	Deschutes National Forest
DSC	Detrimental Soil Conditions
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973, as amended
FS	Forest Service
FSH	Forest Service Handbook
FSM	Forest Service Manual
FSR	Forest Service Road
GIS	Geographical Information System
HRV	Historic Range of Variability
IDT	Interdisciplinary Team or ID team
KEA	Key Elk Area
LRMP	Deschutes National Forest Land and Resource Management Plan also referred to as Forest Plan
MEC	Midstate Electric Company
MIS	Management Indicator Species
NEPA	National Environmental Policy Act
NFR	National Forest Roads
NFMA	National Forest Management Act
PDC	Project Design Criteria
ROW	Right of Way
SDI	Stand Density Index
S&Gs	Standards and Guidelines
TES	Threatened, Endangered and, Sensitive Species
Abbreviations	
dbh	Diameter at breast height

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NOTICE: This document is part of the public scoping process under the National Environmental Policy Act (NEPA) 40 CFR Parts 1500-1508 and may be released under the Freedom of Information Act (FOIA) 5 U.S.C. 552. Comments received in response to this solicitation, including names and address of those who comment, will become part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the agency with the ability to provide the respondent with subsequent environmental documents of eligibility to object.

CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 BACKGROUND AND EXISTING CONDITION

Midstate Electric Cooperative, Inc. is a private, non-profit rural electric cooperative providing electrical power and related services to over 18,000 member/owners in parts of four Central Oregon counties: Deschutes, Klamath, Lake and Lane. Midstate has provided power to residential, commercial, industrial and agricultural members for over 60 years. Currently, Midstate has only one transmission line that was built in 1972 which supports its entire system. Any power outage along this transmission line for maintenance or from hazards, such as falling trees could disconnect all of Midstate's customers. For instance, impacts to that line from a tree-cutting incident in November 2013 and a windstorm in January 2014 knocked out power to most of the cooperative's customers for several hours.

Another upcoming factor, which demonstrates the need for a backup transmission line, is that the existing transmission line has approximately a 50-year lifespan, which is almost expired. In order to perform maintenance to the existing line, it would need to be de-energized to allow Midstate to replace poles along the line; work that is easier and safer to do when power to the line is off. The proposed transmission line would be able to take the load from the existing line to allow Midstate workers to conduct the work on a de-energized line.

In 2007, BPA conducted a study that lasted approximately three years on how best to serve Midstate's continued customer growth. It identified the need to expand the La Pine Substation and provide a new 115 kV terminal for a new load source. In 2012, BPA applied for and received permission from USFS to expand the La Pine substation. Midstate now needs to build a new transmission line from this terminal at La Pine Substation to alleviate the loading on its existing transmission line.

The Forest Service, on July 25, 2014, received a proposal from Midstate requesting that the Forest Service amend Midstate's existing special use permit to construct a backup 115 kV transmission line to support its existing transmission line and power grid. Midstate, in cooperation with the Forest Service, developed a comprehensive proposal that provided sufficient evidence for the authorized officer to determine the feasibility of the project and its compliance with applicable laws, regulations, orders and policies. The Forest Service also screened this proposal to ensure that it met the requirements of the initial and second level screening criteria as specified by Title 36 of the Code of Federal Regulations, Subpart B, 251.54(e). The authorized officer officially accepted the proposal as an application on February 16, 2016 and notified Midstate that the Forest Service would conduct an environmental analysis pursuant to the National Environmental Policy Act.

1.2 PROPOSED ACTION

On February 16, 2016, the Forest Service accepted an application submitted by Midstate Electric Cooperative Inc. (Midstate) for processing. The application requested the amendment of Midstate's existing special use authorization to include the construction, operation, and maintenance of a new 115 kV transmission line that would provide backup power and alleviate the loading on Midstate's existing transmission line. The proposed 10.7 mile line (approximately 9.3 miles on FS lands) would reduce the number of power outages in the communities of La Pine, Sunriver and the surrounding areas. This project would only authorize use on Forest Service Lands, Midstate is responsible for coordinating with private and other agencies for approval for construction and operation of the proposed line. The majority of the proposed line is directly adjacent to the existing BPA transmission line (Figure 5). Midstate requires a 50 foot right-of-way (ROW) which would overlap the BPA existing corridor by 10 feet. The ROW that Midstate would need to clear of trees, in perpetuity, is 40 feet and for the purpose of this EA will be referred to as the ROW or Zone 1. A 50 foot wide area paralleling the proposed ROW would need hazard tree management and maintenance now and for the life of the transmission

line. This area is referred to as Zone 2 or the hazard tree zone. In Zone 2, a hazard tree is defined as a tree that could hit the transmission line, not all snags in this zone would be considered a hazard. Midstate would purchase the trees that would be removed in Zone 1.

To achieve the purposes of this project and the associated objectives, the Forest Plan, and in particular the Eastside Screens amendment to the plan, needs to be amended to allow for the removal and sale of trees greater than 21 inches diameter at breast height (dbh).

Due to the nature of this project certain strategies and Forest Plan standards and guidelines (S&Gs) are not applicable. These strategies and S&Gs are intended for actions such as vegetation management and this proposed project is to construct, operate and maintain a transmission line, therefore, vegetation in Zone 1 cannot be managed. Midstate needs to safeguard the reliability of their transmission delivery and by keeping Zone 1 cleared it allows Midstate to protect their system and minimize outages. Trees can compromise safety by arcing or sparking which can lead to fire or electrocution. Trees can also cause interruptions in electric service if adequate clearances are not maintained. Low-growing vegetation such as shrubs and brush do not compromise the line.

A detailed description of the proposed action can be found in Chapter 2

1.3 PURPOSE AND NEED

The Deschutes National Forest in accordance with Title 36 of the Code of Federal Regulations (CFR), Part 251, Subpart B, has identified a need for action on an application submitted by Midstate Electric for issuance of a Forest Service Special Use Permit for the proposed transmission line. The purpose of this project is to consider the request made by Midstate and whether to authorize use of National Forest System lands for the construction, operation, and maintenance of a 115 kV transmission line to support Midstate's current electric grid. The backup transmission line would alleviate the loading on the existing transmission line and provide more reliable power to communities.

1.4 PROJECT AREA DESCRIPTION

The project area is located on the Bend-Fort Rock Ranger District of the Deschutes National Forest in Deschutes County, Oregon; Township 21 South, Range 11 East, Sections, 8, 17, 20, 29, 32 and Township 22 South, Range 11 East, Sections 5, 7, 8, 17, 18, Willamette Meridian. The beginning of the project area would be the BPA/ La Pine Substation. The line would then travel from the substation across Finley Butte road, turn east in an existing Midstate ROW until it crosses under the BPA transmission line. Then the ROW would follow the designated corridor for approximately 9.3 miles (including crossing over two portions of private land and passing the Newberry Estates Subdivision). It would then turn west along North McKay Road (app. 1.4 miles), cross US Highway 97 onto BLM land along State Rec. Road (0.5 miles), then turn north (0.5 miles) to connect to Midstate's State Park Substation. As a whole, the project area is located adjacent to the community of La Pine and southeast of the community of Sunriver. The majority of the project area (approximately 9.3 miles) is located on National Forest System land (Figure 1). There are no wilderness areas, wilderness study areas, wild and scenic rivers, inventoried roadless areas, research natural areas, or potential wilderness areas within or near the project area.

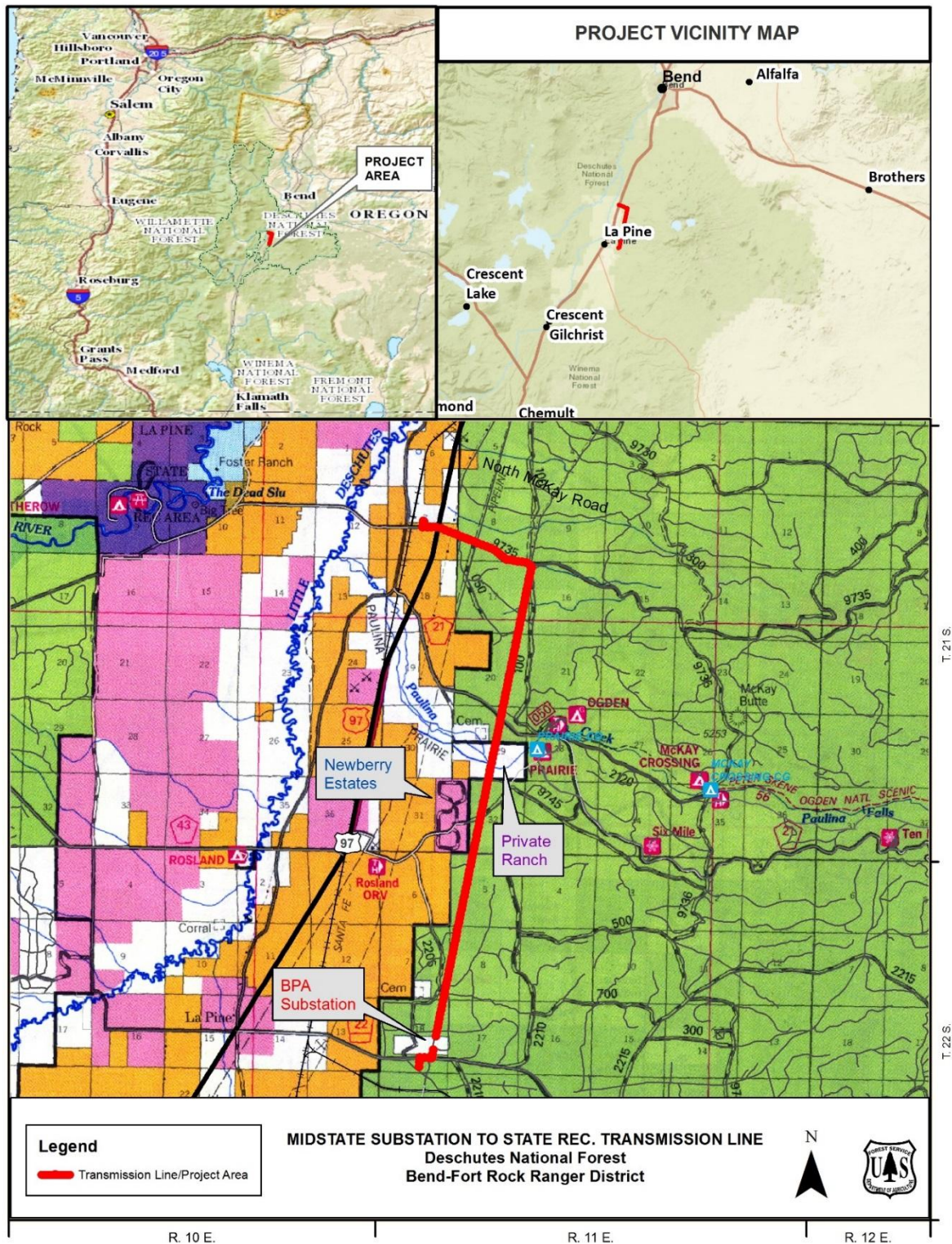


Figure 1 Project vicinity map

1.5 MANAGEMENT DIRECTION

1.5.1 DESCHUTES NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

This environmental assessment is tiered to the Final Environmental Impact Statement (FEIS) for the Deschutes National Forest Land and Resource Management Plan as amended. The Forest Plan guides all management activities on the Forests. It establishes overall goals and objectives, and standards and guidelines for proposed activities, including specific management area guidance for resource planning. Major Forest Plan amendments that pertain to this project are: Eastside Screens guides all natural resource management activities within the project area and provides standards and guidelines for the Deschutes National Forest.

Table 1-1: Management Areas and Acres within the Project Area

LRMP Management Allocations	Acres of Management Allocation within Zone 1 – ROW	Acres of Management Allocation within Zone 2-Hazard Trees
MA8 General Forest	40.27	40.27
MA9 Scenic Views	4.89	4.29
Other Ownership	7.69	7.69
TOTAL	52.85	52.25

*Acres vary slightly from project boundary acres due to small differences in the GIS analysis of management areas; this represents an analysis error of less than 0.1%.

- MA8 General Forest – approximately 8 miles of line construction
- MA9 Scenic Views – approximately 1 miles of line construction

MA8 General Forest

The overall goal of general forest is to provide visitors with high quality scenery that represents the natural character of Central Oregon (LRMP 4-121). Special uses will be allowed if they are compatible with other uses in the area (M8-28/LRMP 4-120).

MA9 Scenic Views

The goal of scenic views is to provide Forest visitors with high quality scenery that represents the natural character of central Oregon. The theme of scenic views is for landscapes seen from selected travel routes and use areas to be managed to maintain or enhance the appearance of the areas being viewed (LRMP 4-121). Utilities may be located in these areas if the facilities and associated improvements are located, designed and maintained to blend with the characteristic landscape. Visual quality objectives may not always be met when the viewer is within the special use site itself, due to the usual large scale of these facilities. However, when viewed from travel routes, recreation areas, and other sensitive viewer locations, Visual Quality Objectives should be met (M9-83/LRMP 4-130).

Trees may be removed within this management area where necessary to permit access to geothermal sites, mineral development, electronic sites, utilities and other special uses (M9-84/LRMP 4-130).

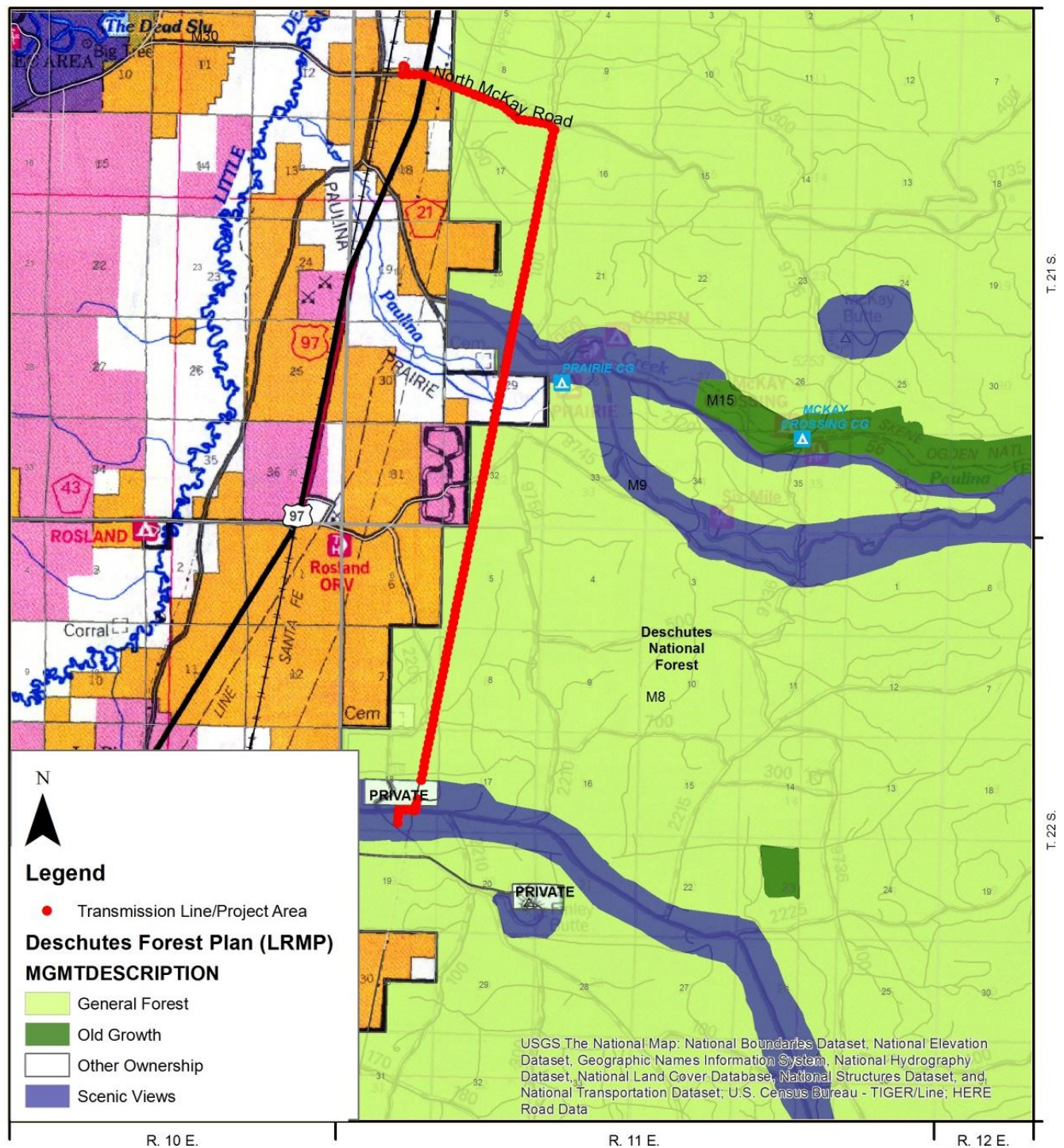


Figure 2 Forest Plan management areas in the project area.

A majority of the project area is located along a utility corridor designated by the Deschutes National Forest LRMP (SU-1/LRMP 4-75). The Forest Plan directs us when applicable utilize residual capacity in existing corridors (SU-2/LRMP 4-75) and when residual capacity is not available, consider the expansion of existing corridors (SU-3/LRMP 4-75).

Due to the nature of this project certain strategies and Forest Plan standards and guidelines (S&Gs) are not applicable. These strategies and S&Gs apply to lands where vegetation and water resource management are the principle objectives. Vegetation in Zone 1 cannot be managed. Midstate needs to safeguard the reliability of their transmission delivery and by keeping Zone 1 cleared, it allows Midstate to protect their system and minimize outages. Trees can compromise safety by arcing or sparking which can lead to fire or electrocution. Trees can also cause interruptions in electric service if adequate clearances are not maintained. Low-growing vegetation such as shrubs and brush do not compromise the line.

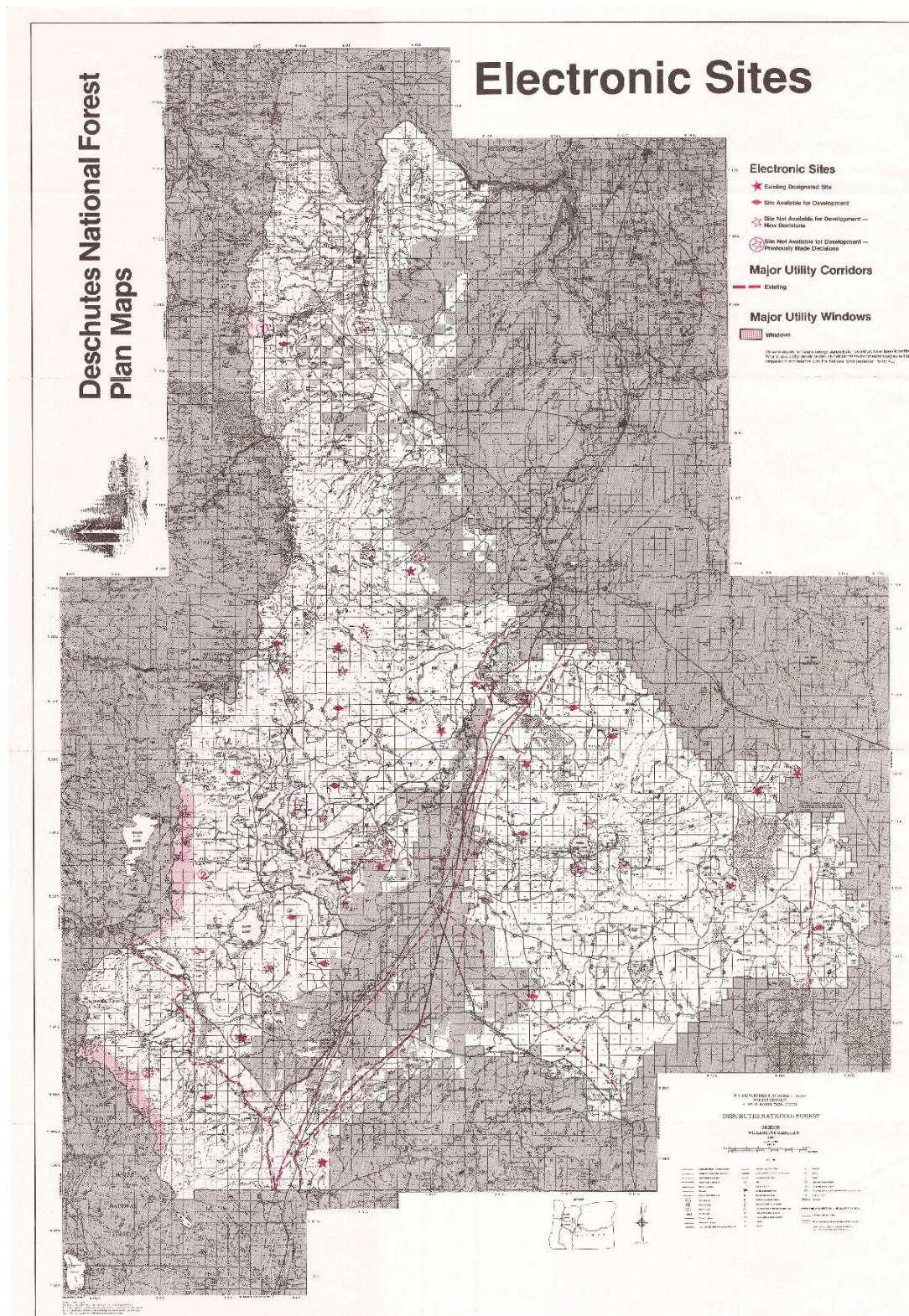


Figure 3 Forest Plan utility corridor designation (dotted lines are utility corridors).

1.5.2 AMENDMENTS TO THE DESCHUTES LAND AND RESOURCE MANAGEMENT PLAN

In 1995, the Regional Forester amended Forest Plans east of the northern spotted owl range. The project area is subject to this amendment, also known as the Eastside Screens. The EA for the Screens stated the primary purpose was “to conserve those components of the landscape – old forest abundance, wildlife habitat in late and old structural stages – in relation to larger ecosystem management to protect habitat for certain species of wildlife and to promote the vigor and health of the forests.” (Revised Environmental Assessment for the Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales, pg. 5). The intent of the Eastside screens is to preserve and manage for late and old structure habitats. Although intended to be interim direction, the Eastside Screens are still in effect for timber sale planning on the Deschutes National Forest east of the range of the spotted owl. The Amendment contains guidelines for management of timber sales in late and old structure (LOS) relative to the Historic Range of Variability (HRV), wildlife connectivity corridors, snags, coarse woody debris, and goshawk management.

The purpose of the Midstate project is to construct a backup transmission line in order to provide reliable power to communities and is not a vegetation management project. A 40 foot ROW cleared of trees would be needed to construct the backup transmission line, this would remove approximately 46 acres of FS lands, along the 9.3 mile proposed route out of timber production. The intent of this project is not to manage stands for late and old structure but to build a transmission line. This a project is not part of the Districts timber sale program. Timber removal would be done by Midstate and the Forest Service would sell the timber at current appraised value directly to Midstate, whereas Eastside Screens is applicable to timber sale projects. The responsible official has determined that in order to meet the purpose and need of this project, the 1990 Deschutes Forest Plan as amended by the Eastside Screens would need to be amended. The amendment is specific to the Midstate Substation to State Rec Road Transmission Line project (referred to as Midstate), would apply only within the project area and only to activities included in the Midstate project. The following amendment would exempt the Midstate project from the following Eastside Screens standard:

Eastside Screens Standard 6 (d) Scenario A(2)(a): “Maintain all remnant late and old seral and/or structural live trees > 21 inches DBH that currently exist within stands proposed for harvest activities.”

1.6 SUMMARY OF THE SCOPING PROCESS

The Midstate Substation to State Rec Road Transmission Line project was first published to the Deschutes and Ochoco National Forest project webpage on 4/14/2015 at:
<http://www.fs.usda.gov/project/?project=46803>.

This project was first published in the Deschutes National Schedule of Proposed Actions (SOPA), a quarterly publication, in July 2015 and has appeared in each quarterly SOPA since then. This is a quarterly report that is distributed to interested individuals, organizations, and agencies Forest-wide.

The SOPA is automatically updated and available on the Deschutes and Ochoco National Forest webpage at: <http://www.fs.fed.us/sopa/forest-level.php?110601>.

A detailed description of the proposed action was mailed on November 15, 2015, to approximately 380 forest users and concerned publics, soliciting comments and concerns related to this project (the complete mail list located in the project record). This letter was also mailed to the Burns Paiute Tribe, The Klamath Tribe, and the Confederated Tribes of the Warm Springs. Consultation with the tribes is complete and coordination is ongoing. Three responses were received, which were considered and evaluated. Discussion of public comments can be found below in Chapter 1.7 Issues.

1.7 ISSUES

The Interdisciplinary (ID) team of Forest Service resource specialists evaluated input from public scoping. All issues raised during the life of this project are addressed in this EA. Issues and concerns are used to formulate and develop alternatives or develop constraints and mitigation measures to reduce or eliminate environmental effects.

Issues are generally divided into the following groups: non-key issues, key issues and analysis issues.

1.7.1 EVALUATION OF NON-KEY ISSUE SCOPING COMMENTS

Comments brought forth from public scoping were evaluated. Some public respondents presented concerns that were considered but were determined to be non-key issues because of a variety of reasons, such as, the issue is outside the scope of this project; is already decided by law, regulation or other higher level decision; is conjectural and not support by scientific or factual evidence; is adequately addressed in alternatives (including project design features and/or mitigation measures). The following table summarizes issues brought forth in scoping and provides rationale why this issue has been determined to be a non-key issue.

Table 1 Non-key Issues Summary and Rational

Commenter	Issue	Rationale
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<p>Tom Partin American Forest Resource Council</p>	<ol style="list-style-type: none"> 1. AFRC would like to make sure the contracting mechanism for disposition of the ROW logs is in place, and the wood is quickly utilized. 2. AFRC suggest that the contractor doing the felling and skidding of the ROW material work closely with the local sawmills to ensure that the merchantable logs are cut into the desired lengths these plants use. This might include making sure ROW logs are placed in a position for easy access and removal. This will take some coordination between the contractor and sawmills 3. Timber that is felled and skidded should be removed from the project area in a timely manner to prevent deterioration of the sawlogs including bluing and checking. Lodgepole and ponderosa pine timber quickly deteriorates after felling—the logs should be quickly decked and removed to prevent deterioration and devaluation. 4. AFRC supports a forest plan amendment to harvest trees over 21 inches in diameter at breast height. These trees will need to be removed to successfully locate the new line. Additionally these trees can be utilized by AFRC members for sawlogs. 5. AFRC agrees that this project falls under the category of special uses, and is compatible with existing uses in the area—it will just be paralleling an existing utility corridor. 6. AFRC further suggests that while there is timber removing equipment in the area constructing the new corridor, you take this opportunity to remove any trees that may be hazardous to the existing or new line (cut danger trees that might reach the lines). 	<p>Midstate plans to buy the timber directly from the Forest Service. It is Midstate’s decision on how, when, and where to remove the timber in Zone 1. Hazard trees felled in Zone 2 would remain on the ground.</p>
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<p>Sarah Gregory</p> <p>Oregon Department of Fish and Wildlife</p>	<p>Concerns were raised about the impact to wetlands and riparian areas near Paulina Creek and the proximity of the project to the Little Deschutes River where the federally listed spotted frog occurs.</p>	<p>The original proposed route that was scoped with interested parties showed the route going around a private parcel and crossing Paulina Creek on National Forest lands. The proposed route has changed. It now crosses Paulina Creek on private land. This route requires less impact to the project area as instead of removing a 50 foot ROW of trees bordering around private for about a mile, the line would continue to parallel the BPA ROW straight across private land.</p>
<p>Doug Heiken</p> <p>Oregon Wild</p>	<p>This project area is part of an important big game migratory route. Hiding cover is important to big game. Clearing this long linear right-of-way will present an additional barrier to big game movement. This incremental additional migration barrier may represent significant cumulative effects, because there are already numerous other barriers to big game movement in this same corridor, including but not limited to Hwy 97 and the wide fuel buffers that have been implemented over the last decade, expansion of residential development in the area, a network of existing roads in the area, and extensive forest management on both public and private lands in the area.</p>	<p>To support the loss of wildlife hiding cover the following roads are proposed to be decommissioned or closed/maintenance level 1 status. In Zone 2 hazard trees will be felled and left onsite. Due to the nature of this project certain strategies and Forest Plan standards and guidelines (S&Gs) are not applicable. These strategies and S&Gs apply to lands where vegetation and water resource management are the principle objectives. Vegetation in Zone 1 cannot be managed. Midstate needs to safeguard the reliability of their transmission delivery and by keeping Zone 1 cleared, it allows Midstate to protect their system and minimize outages. Trees can compromise safety by arcing or sparking which can lead to fire or electrocution. Trees can also cause interruptions in electric service if adequate clearances are not maintained. Low-growing vegetation such as shrubs and brush do not compromise the line.</p> <p>Direct, indirect, and cumulative effects to wildlife species are addressed in Chapter 3, additional information and analysis are in the Wildlife report in the project record.</p>
<p>Doug Heiken</p> <p>Oregon Wild</p>	<p>Concerns were raised over the subsidy of continued expansion of residential development in a highly fire prone landscape and sacrificing forest, wildlife and natural fire regimes so that people can live in a tinderbox.</p>	<p>This project is not proposing an expansion of residential developments, it is focused on installing a backup transmission line to ensure reliable power to communities. The majority of the transmission line parallels and overlaps a portion of the existing BPA line in order to minimize disturbance as much as possible. The possibility or probability of future development on private lands is unknown and outside the scope of this decision.</p>

Doug Heiken Oregon Wild	Questioned whether the footprint of the effects are much larger than the powerline right-of-way as every new house in this landscape makes the Forest Service job more difficult in terms of fire management, habitat management, recreation management, etc.	This environmental analysis addresses the direct, indirect and cumulative effects of the proposed project. Direct effects occur at the same place and time as the action that is proposed. Indirect effects occur at a different place or later in time from the proposed action. Cumulative impact is from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions. Each resource area determines the bounds of their cumulative impact analysis area (Chapter 3 and resource reports).
Doug Heiken Oregon Wild	Questioned how the costs of this subsidy considered in making decisions.	Construction could have a small but positive impact on the local economy through the procurement of materials and equipment and spending by construction workers. Operation of the proposed transmission line is not expected to increase economic activity in the local economy, but would alleviate the loading on the existing line and improve the reliability of power to customers. This project is subject to cost recovery, any cost taken on by the Forest Service to analyze and implement this project is paid by Midstate.

1.7.2 ANALYSIS ISSUES

Analysis issues, as used in this EA, were identified as those that do not drive an alternative, or address the purpose and need, and that can be addressed through standards and guidelines, mitigation, analysis needs or monitoring. These items did not result in differing design elements among alternatives but are important for providing the Responsible Official and the public with complete information about the effects of the project.

The following elements were not considered key issues but are relevant to the project and tracked through the analysis:

1. Wildlife
2. Scenery
3. Proposed, Endangered, Threatened, and Sensitive Plant Species
4. Invasive Plant Species
5. Fisheries, Water Quality, and Riparian Habitat
6. Soil Quality
7. Heritage Resources
8. Transportation System

1.7.3 KEY ISSUES

Key issues are defined as those directly or indirectly caused by implementing the proposed action. As a result of the overall scoping process, the authorized officer determined that there were no key issues regarding the proposed action. See project record and 1.7.1 Evaluation of Non-Key Issue Scoping Comments.

1.8 OTHER PERTINENT LAWS AND REGULATIONS _____

Analysis and documentation has been done according to direction contained in the National Forest Management Act, the National Environmental Policy Act, the Council on Environmental Quality regulations, Forest Service NEPA regulations, The Endangered Species Act, the National Historic Preservation Act, the Clean Air Act, and the Clean Water Act.

The following is a brief explanation of the pertinent laws and their relation to the current project planning effort.

1.8.1 EXECUTIVE ORDER IMPROVING PERFORMANCE OF FEDERAL PERMITTING AND REVIEW OF INFRASTRUCTURE PROJECTS

This order (signed March 22, 2012) requires Federal agencies to take all steps within their authority, consistent with available resources, to execute Federal permitting and review processes with maximum efficiency and effectiveness, ensuring the health, safety, and security of communities and the environment while supporting vital economic growth.

1.8.2 THE ENERGY POLICY ACT OF 2005

Section 368(c) of the Energy Policy Act of 2005 provides that the Forest Service have an ongoing responsibility to establish procedures for identifying and designating additional energy transmission corridors on federal lands and to expedite applications for electric transmission and distribution facilities within those corridors. Cooperate and coordinate with other federal agencies to optimize siting of rights-of-way for energy transmission corridors (30 U.S.C. 185(p); 43 U.S.C. 1763), and endeavor to expedite applications for electric transmission and distribution facilities on National Forest System lands through coordination with other affected federal agencies. (FSM 2703.2)

1.9 PROJECT RECORD

This EA hereby incorporates by reference the project record (40 CFR 1502.21). The project record references all scientific information that was considered for the analysis, including reports, literature reviews, review citations, academic peer reviews, science consistency reviews, and results of ground-based observations to validate best available science. Chapter 3 provides a summary of the specialist reports, biological assessments, and biological evaluations in adequate detail to support the decision rationale. All reports are maintained in the project record. The project record is available for review at the Bend-Fort Rock Ranger District Office, 63095 Deschutes Market Road, Bend, Oregon 97701, Monday through Friday 8:00 a.m. to 4:30 p.m.

1.10 DECISION TO BE MADE

The responsible official for deciding whether or not to issue and the terms and conditions of a special use permit for a new transmission line is the Forest Supervisor of the Deschutes National Forest. The responsible official can decide to authorize or not to authorize the request by Midstate to amend their existing special use permit to include the construction, operation, and maintenance of a new 115 kV transmission line that would provide backup power and alleviate the loading on Midstate's existing transmission line.

CHAPTER 2 – ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This chapter describes and compares the alternatives considered for the issuance of a special use permit to Midstate for a backup transmission line. This chapter is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14).

2.2 ALTERNATIVES CONSIDERED IN DETAIL

This EA assesses the potential effects of two alternatives: a No Action Alternative (Alternative 1) and one Action Alternative (Alternative 2).

2.2.1 ALTERNATIVE 1 – NO ACTION

The interpretation of this no action alternative is that the proposed action would not take place. Under this alternative, the Forest Service would not issue a special use permit to Midstate for the construction of a backup transmission line therefore the line would not be constructed. This alternative serves as a baseline from which the interdisciplinary team can evaluate the proposed action.

2.2.2 ALTERNATIVE 2

Most of the new transmission line proposed by Midstate is located within a Forest Plan Designated Utility Corridor (currently occupied by a Bonneville Power Administration (BPA) 230kV Transmission Line and 125foot ROW). Midstate would construct a 50foot ROW adjacent to the BPA ROW. The Midstate ROW would overlap the existing BPA corridor by 10 feet, reducing the width of the area needing to be cleared to 40 feet, this 40-foot clearing for the purposes of this EA is referred to as the ROW or Zone 1. Two additional corridors (Figure 5) that do not parallel the BPA line would be constructed, one from the BPA Substation to Finley Butte Road and the other along North McKay Road to accommodate the new line.

Table 2 Midstate proposed action miles and acres.

Midstate				
	Miles	Acres		
		Zone 1 (40 feet of Vegetation Clearing)	Zone 2 (50 feet Hazard Trees Felled and Left)	Total Footprint (Zone 1 and Zone 2)
FS	9.3	46.12*	56.36	102.48
BLM	0.6	2.91	3.63	6.54
Other	0.8	3.88	4.85	8.73
Total	10.7	52.91	64.84	117.75

*The portion of the right-of-way along Finley Butte road is approximately 500 feet in length and would be 130 feet in width. This portion of the right-of-way would not have 130 foot swath of vegetation cleared because the right-of-way includes Finley Butte road and other previously cleared areas.

Specifically, this project would include the following activities and improvements:

- Midstate (this includes employees and contractors) would clear a 130 foot ROW from Midstate's facilities located in the La Pine BPA substation to Finley Butte road. This portion of the ROW is 500 feet in length and the 130 foot ROW includes Finley Butte road and other previously cleared areas. (Midstate would remove the existing overhead line coming out of the substation. This action was analyzed in the Midstate Electric Cooperative, INC. Finley Butte Road Project signed in 6/8/2015).

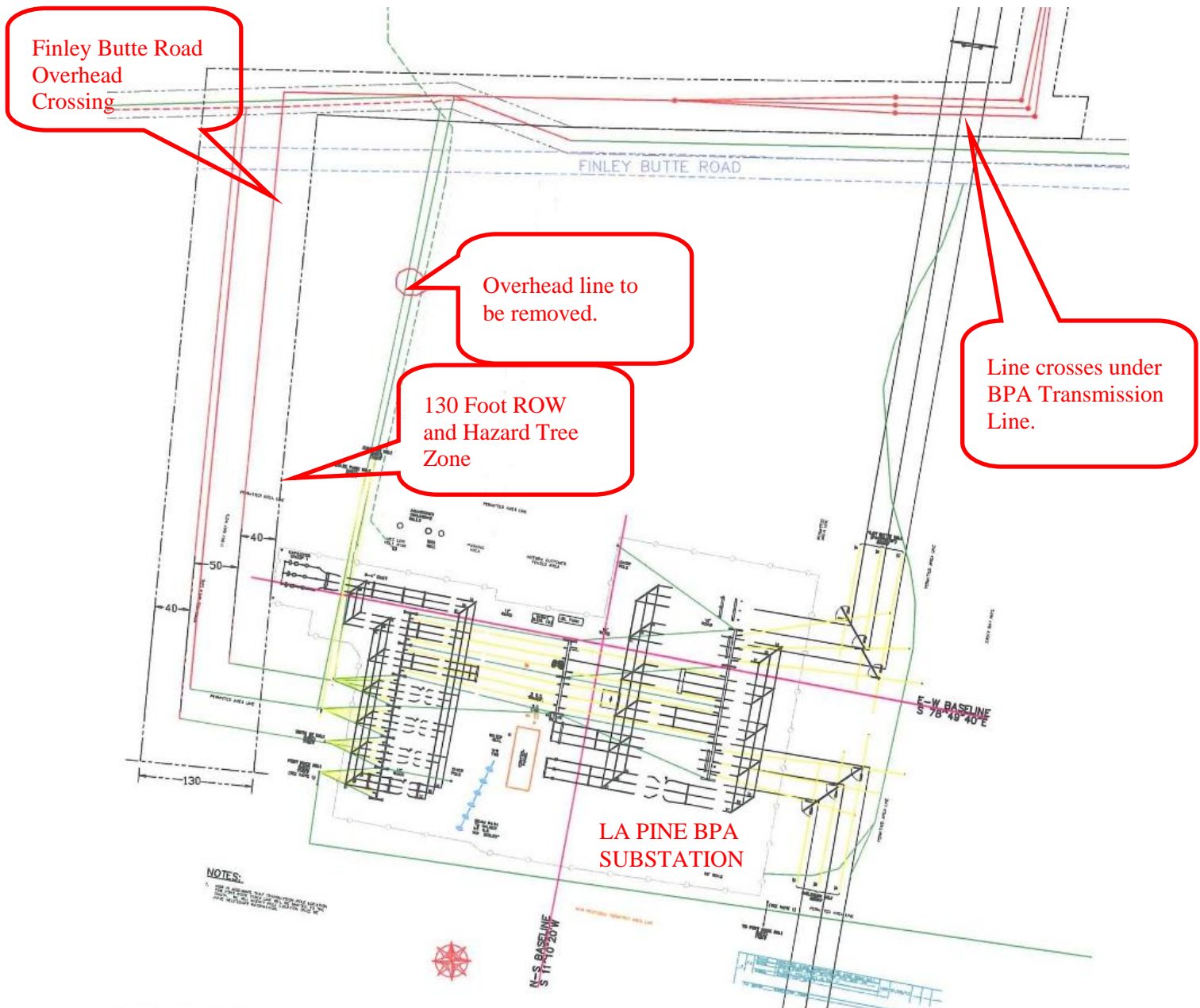


Figure 4 La Pine BPA Substation diagram.

- The line would then cross Finley Butte Road to connect to an existing Midstate ROW on the north side of the road and head east until it crosses under the BPA Transmission Line.

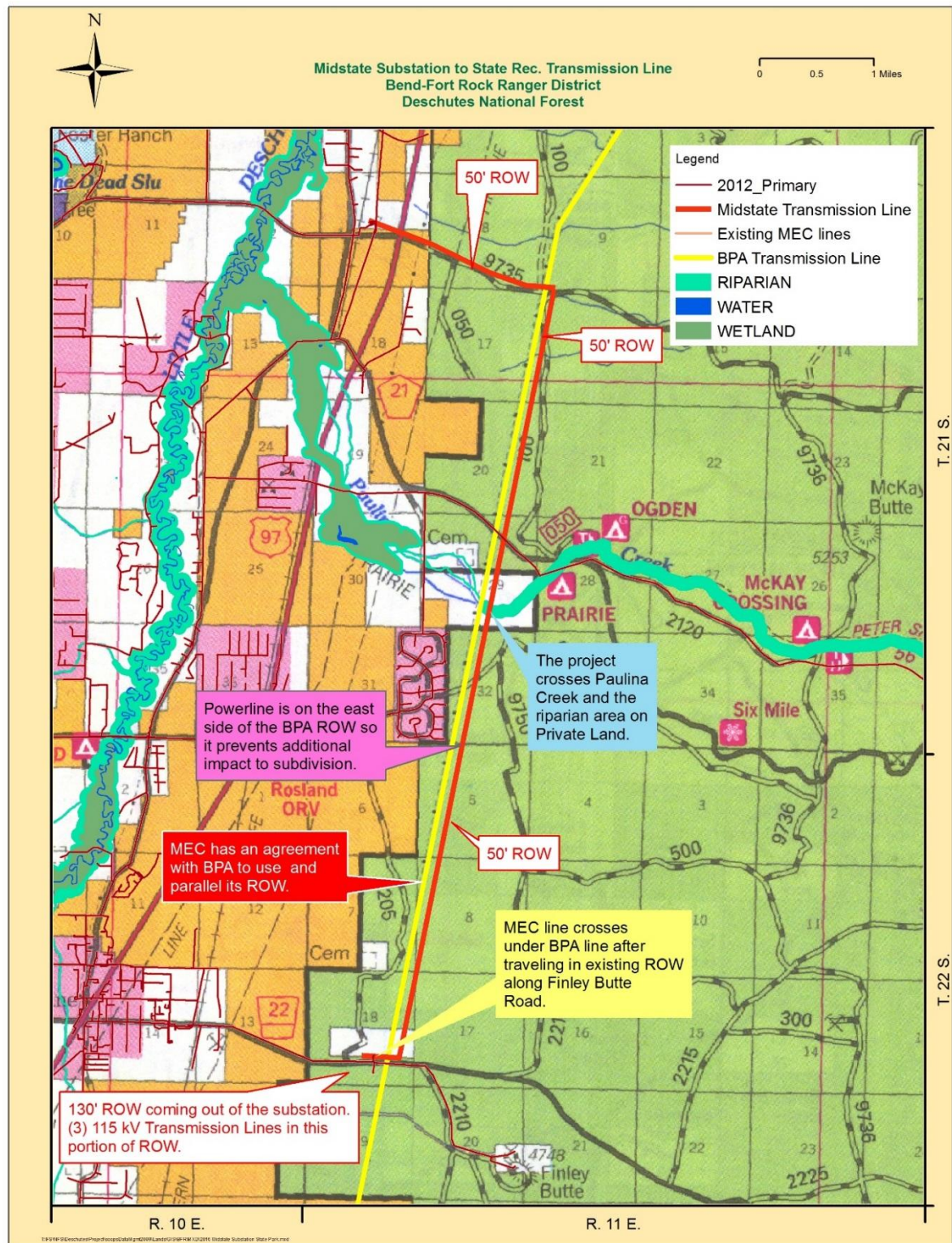
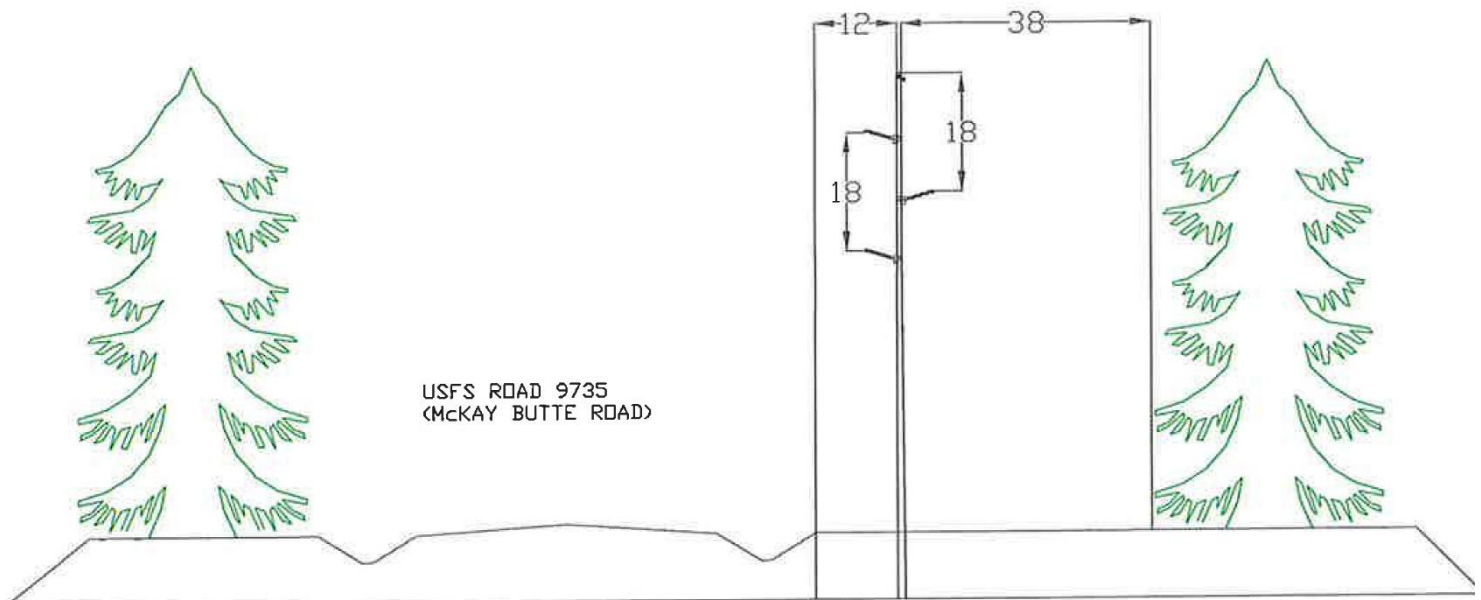


Figure 5 Midstate's proposed line, BPA's existing line, and project description.

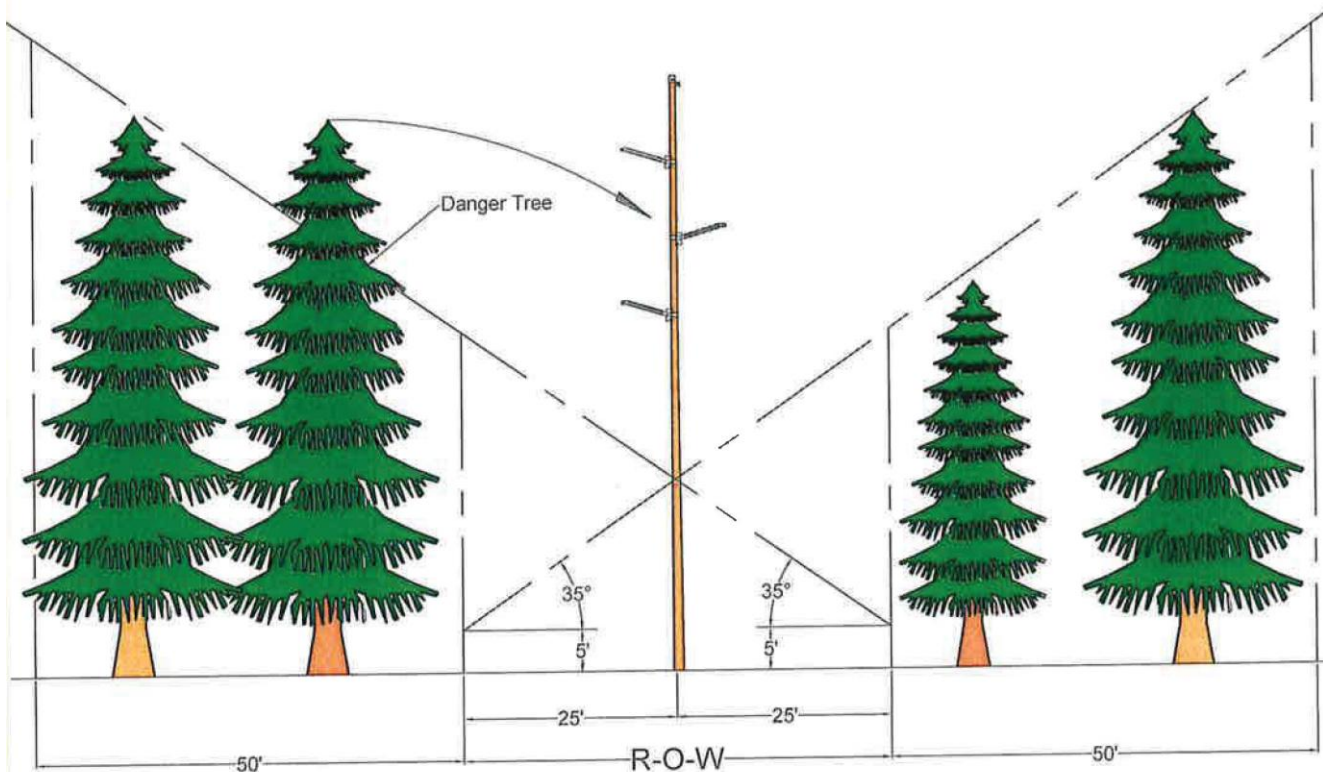
- Midstate would clear a 40 foot ROW for approximately eight miles along the east side of the designated utility corridor, adjacent to the BPA ROW, to North McKay Road. (The line also crosses State and private land along this route).
- From the BPA Substation going north, Midstate would install a pole line at a 10-foot offset from the BPA 125foot ROW until it crosses back under the BPA line at the north end of the BPA ROW (approximately 8 miles) and cross McKay road to the north side.
- Midstate would clear 50 feet ROW on the north side of McKay road from the crossing until it reaches Highway 97. Within the ROW, Midstate would install the line approximately 12 feet from the north edge of McKay road until it crosses Highway 97. The line would then remain about 10 feet off the State Rec road edge until it turns north into Midstate's State Park



Substation.

Figure 6 Proposed clearing at McKay road.

- In total, the area that Midstate would clear for its powerline ROW would include approximately 46 acres (FS lands) within designated Zone 1 (Table 2).
- Midstate has obtained authorization from Gas Transmission, BPA, Spectra Ranch, the State of Oregon, and Oregon Department of Transportation to install the powerline across their ROWs.
- Midstate would install 80-foot wood poles approximately every 320 feet along proposed route in Zone 1. Temporary work areas would be 50 feet around the pole locations



Note:

- 1) A 35° angle at 5' height located at the r-o-w boundary identifies hazard trees that could potentially fall and hit the transmission line resulting in a forest fire. Corrective action can then be implemented to eliminate the hazard.
- 2) Typical transmission pole 80 feet in length, 70 feet is above grade.
- 3) Wire spacing minimum 120 inches phase to shield wire.
- 4) Wire spacing minimum 177 inches phase to phase.

Figure 7 Description of Midstate's hazard tree evaluation criteria.

- Midstate would fell hazard trees that pose an imminent threat to the new transmission line, these hazard trees would be left on the ground and not removed. This area would add an additional 50 feet to the project area and is designated as Zone 2 (Table 2). The hazard tree zone would receive this type of maintenance in perpetuity of the transmission line.

Hazard trees are trees leaning toward or are dead and dying that may jeopardize the transmission line. These trees have a high probability of taking the power out during a windstorm or starting a forest fire if they fall on the line. Not all snags in this zone would be felled, only those that could hit the line. Midstate would not remove healthy trees that are not

learning towards the line. The diagram above (Figure 7) shows what dead or unhealthy trees are considered hazards to the line.

- The Forest Service would cruise the timber and sell it to Midstate for fair market value. Midstate would then be responsible to remove the timber from the project area.
- Midstate would pile all slash to Forest Service standards (Chapter 2.3 Project Design Criteria – Fuels). Slash would be burned the following year by Forest Service crews.

In Summary, the proposed action would result in the issuance of a special use permit to Midstate to construct the backup transmission line. Upon completion of the project, Midstate's special use permit would be amended to include the line along with its operation and maintenance.

For the purposes of this analysis, it is assumed that Zone 1 (approximately 46 acres) would be cleared of trees in perpetuity. In Zone 2, trees would be felled and left in place only if they are dead/dying/diseased or leaning toward the line and are located at a distance that could hit the line during a windstorm. The following figure (Figure 8) graphically displays Zone 1 and Zone 2.

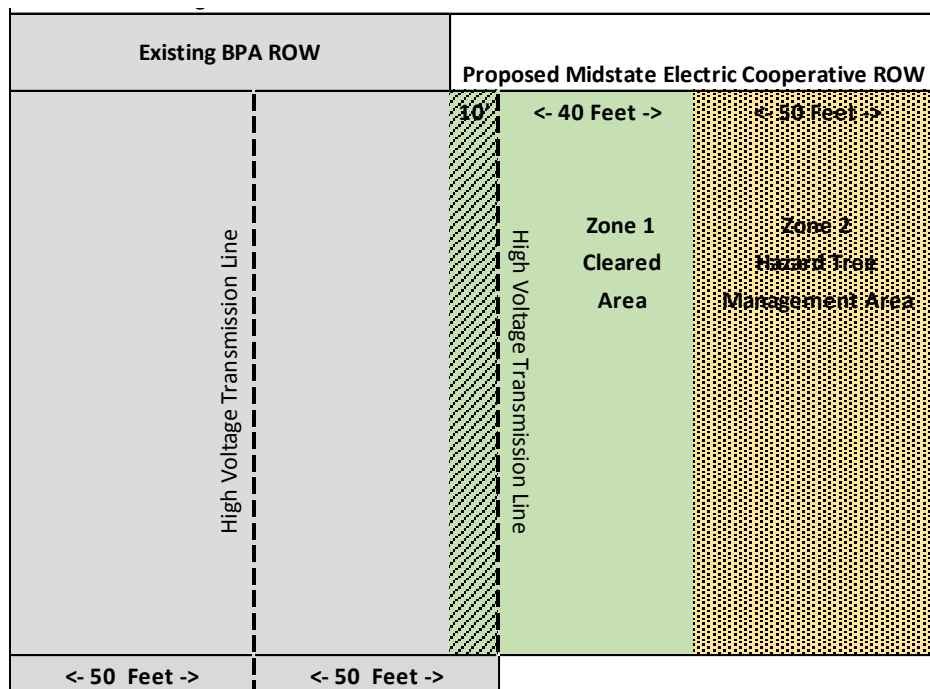


Figure 8 Graphic representation of the existing BPA right of way, the proposed Midstate right of way and the proposed hazard tree management zone.

Forest Plan Amendment to Eastside Screens

This project proposes a Forest Plan amendment that is specific to the project area and proposed activities. The amendment addresses the Regional Forester Amendment #2 Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (referred to as the Eastside Screens). The primary purpose of Eastside Screens is to conserve those components of the landscape – old forest abundance, wildlife habitat in late and old structural stages – in relation to larger ecosystem management to project habitat for certain species. An amendment is needed to meet the purpose and need of the project and would result in harvest of live trees greater than 21 inches dbh within the 40 foot ROW also referred to as Zone 1.

The proposed action would require an amendment to Eastside Screens Standard 6(d) Scenario A (2)(a): “Maintain all remnant late and old seral and/or structural live trees \geq 21 inches dbh that currently exist in within stands proposed for harvest activities.” To meet the purpose and need of this project this amendment is needed for Zone 1 of the proposed line. It is not possible for Midstate to leave trees in Zone 1, there are approximately 51 trees \geq 21 inches dbh, roughly 1.1 trees per acre in this zone. Midstate needs to safeguard the reliability of their transmission delivery and by keeping Zone 1 cleared, it allows Midstate to protect their system and minimize outages. Trees can compromise safety by arcing or sparking which can lead to fire or electrocution. Trees can also cause interruptions in electric service if adequate clearances are not maintained. Low-growing vegetation such as shrubs and brush do not compromise the line.

Stand structures found in the ROW are classified as either stem exclusion closed canopy (approximately 5%) and stand initiation (approximately 95%). Field surveys confirmed that there are no stands that could be classified as having last and old structural characteristics within the project area.

Connected Actions

Transmission Line Maintenance

Midstate would inspect the line one to two times a year, typically in the spring and fall after hunting season. During this inspection, Midstate would look at the poles, the line itself and scan for any hazards that may impede the line. Approximately every 10 years line clearing and pole testing would take place. Line clearing entails mowing or cutting trees growing in the ROW. Pole testing can include inspecting the pole for conditions such as: cracks, holes, rot/decay, knots, unusual angles, solid conditions, and burn marks. The insulators would be replaced every 35 plus years, on as needed bases. Pole replacements would typically occur approximately every 50 years and would be coordinated with the special use coordinator prior to replacement.

Transportation System

The current condition of the existing roads in the project area are generally in good condition. Maintenance items shall consist of that necessary to sustain this road during the life of the project. This type of maintenance shall consist of providing dust abatement such as water to reduce the impact of pulverization of the native material and to keep travelers in the roadway. In addition the need to spot surface in locations where the road way is being extremely impacted or becomes difficult to travel. Any material used in spot surfacing would be from a certified weed free source. The 012 road (Figure 9) would serve as the primary access route. The 012 travelway would be kept at the current width. As this project nears completion, the 012 would receive the adequate amount of post project maintenance necessary to achieve a state of “self-maintaining”. Restoration of drainage and armoring of drainage structures (rolling dips, waterbars and leadouts) are critical elements to achieve the desired effect. Other associated maintenance on these road types would include limited brushing, pre and post use blade and shaping of roadway to improve drainage. The construction of new roads for the implementation, operation and maintenance are not needed for this project. Midstate is planning to use the existing BPA roads to access the line.

To support the loss of wildlife hiding cover the following roads are proposed to be decommissioned (approximately 3 miles) or closed/maintenance level 1 status (approximately 7.65 miles). The Forest Plan states “Roads will be closed through the most economical method that is effective in meeting the management objectives for the area. These include seasonal administrative closures, sign restrictions, barriers, gates, and road obliteration. The preferred method of closing roads will be by obscuring the road entrance to discourage vehicle access” (TS-8). Maintenance level 1 roads are considered to be closed roads to general travel. The travel exception for maintenance level 1 roads are considered intermittent service roads that are closed to vehicular traffic. Basic custodial maintenance is performed

to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. (FSH 7709.59 Ch. 62.32) The roads proposed for decommissioning would be removed from the Forest Service road system. A variety of methods can be used to decommission a road including barriers, road obliteration, and other methods for discouraging vehicle access.

Table 3 Transportation recommendations in the Midstate project.

Road Number	Length	Operational Maintenance Level	Objective Maintenance Level	Final Recommendations
2205020	1.06	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205300	0.47	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205320	0.72	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205490	1.50	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205497	0.25	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735052	0.64	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735060	1.19	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735061	0.38	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735190	0.32	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745109	0.45	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745110	0.15	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745110	0.18	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745110	0.17	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745119	0.17	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205025	0.40	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205190	0.26	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205189	0.19	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205100	0.91	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205100	1.23	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
Total Miles	10.64			

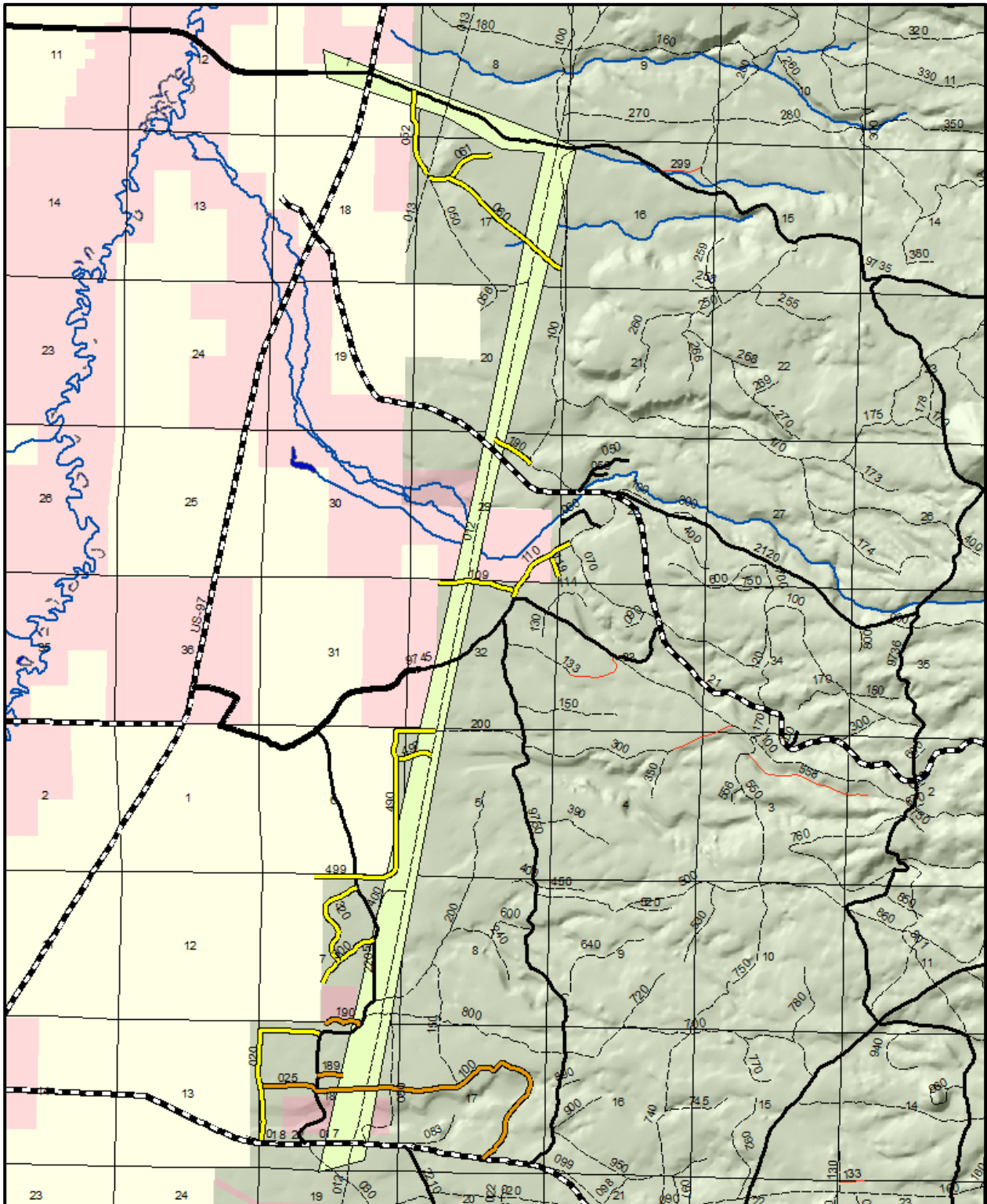


Figure 9 Map of roads in the Midstate project area and recommendations for closure and decommissioning.

Midstate State Park Substation Connection

Prior to the location where the proposed line would cross Highway 97 the line would enter onto BLM lands. The proposed line would continue to follow McKay road until the ROW reaches Highway 97. Then Midstate would install the line approximately 12 feet from the north edge of McKay road until it crosses Highway 97. The line would then remain about 10 feet off the State Rec road edge until it turns north into Midstate's State Park Substation. BLM is in the process of evaluating the action requested by Midstate, Forest Service and BLM have and continue to coordinate on the effects of the project. BLM plans to review the effects determinations and project design criteria made by the Forest Service. If the determination is consistent with BLMs review, then the BLM can tier to this EA and write a decision document regarding whether or not to accept the request my Midstate to perform the actions on BLM land.

2.3PROJECT DESIGN CRITERIA

In order to minimize potential resource impacts from project activities, project design criteria have been incorporated into the action alternatives unless otherwise specified. Project design criteria are devised in the pre-analysis and analysis phases to reduce environmental impacts and comply with applicable laws and regulations. They include, but are not limited to, best management practices (BMPs), standards and guidelines (S&Gs), and standard operating procedures (SOPs).

Wildlife

In project area, restrict disturbance activities within ¼ mile of any known or newly discovered nests as shown in the table below. This condition may be waived in a particular year if nesting or reproductive success surveys reveal that the species indicated is non-nesting or that no young are present that year (LRMP Standard & Guidelines WL-3, 11, 19, 28).

SPECIES	DATES RESTRICTED
Red-tailed hawk	March1 – August 31
Northern goshawk	March 1 – August 31
Cooper's and Sharp-shinned hawks	April 15 – August 31
Williamson sapsucker	May 1 – July 20th
Chipping sparrow	April 15- July 15th

Outside of the powerline right-of-way corridor (Zone 1 where all trees would be removed) if a new goshawk territory is discovered in the project area, a 30 acre no treatment area around would be identified and a 400 acre post-fledging area would be delineated (Eastside Screens Interim Wildlife Standard). An evaluation of potential disturbance would be made prior to planned activities, should a nest be encountered.

Within hazard tree zone of the powerline corridor, retain 3 to 6 logs per acre that are at least 12 inches at the large end or at least 1 slash pile per acre to mitigate loss of downed logs and recruited downed log. This can be in conjunction to existing downed wood within the Hazard Tree Zone meet the down wood guidelines (Eastside Screens Amendment Appendix B page 12; LRMP WL-63, 73).

Trees ≥ 21 inches dbh deemed a hazard within the hazard tree zone (Zone 2), if safely can be done, would be topped to remove the hazard potential. If topped portion is >12 inches dbh at large end, the top may serve to meet downed wood guidelines (see #3).

In addition to close/decommission the following Level 2 (high clearance vehicles) roads in order to mitigate the removal of big game hiding cover:

Decommission	Close road using a tank trap, ballards or another method.
2205-025	9735-060
2205-100	9735-190
2205-189	9745-109
	9750-200
	2200-080
	2205-020
	2205-025
	2205-100
	2205-189

The erected poles would conform to APLIC guidelines to reduce the risk to birds of prey (see <http://www.aplic.org/Electrocutions.php>).

Invasive Plants

To prevent unknown weed sites from being spread, Midstate and/or BPA would survey the right-of-way for weeds and treat them if located. Weed species of highest concern are spotted knapweed, dilation toadflax, mullein, Canada thistle and bull thistle. However, any weed found that occurs on the State of Oregon weed list would be treated <http://www.oregon.gov/ODA/shared/Documents/Publications/Weeds/NoxiousWeedPolicyClassification.pdf>.

To ensure weeds are not brought into the project area, clean equipment prior to entering and after leaving National Forest System lands. Remove mud, dirt, and plant parts from project equipment before moving it into the project area and before proceeding to the next project.

Soils

Best Management Practices, Project Design Features, and Mitigation Measures Applicable to the Proposed Action

Protecting and conserving soil resources is a crucial long-term objective when managing National Forests. At a national level, direction contained in Forest Service Manual 2550, specific to each Region, translates into specific standards and guidelines that are defined in the Land and Resource Management Plans (LRMP) of individual National Forests. Generally, these objectives are aimed at maintaining or enhancing long-term site productivity so that the inherent capability and function of soil resources to support forest or range plant communities and provide for ecosystem services (e.g., nutrient cycling or water storage) is enduring. National level policy, Region 6 guidance, and Deschutes National Forest LRMP standards and guides are summarized in the *Regulatory Framework* section. Achieving these objectives requires practices that are implemented at the project level when activities are taking place. Referred to as Best Management Practices (BMPs), these are typically standard operating procedures intended to either avoid or minimize unwanted impacts (i.e., detrimental soil disturbance). They may become even more refined at the site-level, where project design features (PDFs) are tailored to particular conditions and specific features of the local landscape. Broad-scale conservation objectives and site-level design and protection measures are intended to contain the extent and severity of detrimental soil impacts that can occur as a result of ground disturbing activities. Together these are the principle means for protecting and conserving soil resources so that long-term site productivity is assured.

Best Management Practices (BMPs)

Best Management Practices (BMPs) adapted from the National Best Management Practices for Water Quality Management of National Forest System Lands – Volume 1 (USDA Forest Service 2012) would be implemented as appropriate and are incorporated by reference. Specifically-applicable BMPs are:

- Fac-2. Facility Construction and Stormwater Control (p. 41)
- Fac-9. Pipelines, Transmission Facilities, and Rights-of-Way (p. 48)
- Road-4. Road Operations and Maintenance (p. 111)
- Road-8. Snow Removal and Storage (p. 120)
- Road-9. Parking and Staging Areas (p. 122)
- Road-10. Equipment Refueling and Servicing (p. 123)
- Veg-2. Erosion Prevention and Control (p. 131)
- Veg-4. Ground-Based Skidding and Yarding Operations (p. 134)
- Veg-6. Landings (p. 136)
- Veg-7. Winter Logging (p. 137)
- Veg-8. Mechanical Site Treatment (p. 139)

BMPs are standard conservation practices that have proven effective in protecting soil and water resource values during land management activities. They are considered standard operating procedures and apply to all activities. They are assumed to be readily implementable and have a high probability of success when correctly implemented. While these are considered standard operating procedures on all projects occurring on National Forest lands, local variations of many of these have evolved to adapt to specific ground conditions, Regional guidance, and LRMP direction. Where a site-specific design based on a documented BMP is needed, it is listed in the Project Design Features section below.

Project Design Features (PDFs)

- | | | |
|----|---|-----------------------------|
| 1. | Conduct regular preventive road maintenance on all haul routes to avoid deterioration of the road surface and minimize the effects of erosion and sedimentation. Required post-haul maintenance and storm-proofing/winterizing should be accomplished as soon as possible after haul has been completed on each road segment (BMP Road-4.). | All access and haul routes. |
| 2. | Ensure that water control structures (water bars or slash surfacing, as approved by the Sale Administrator) are installed and maintained on skid trails that have gradients of 10 percent or more or show any evidence of erosion; Ensure erosion control structures are stabilized and working effectively. (LRMP SL-1; BMP Veg-4.) | All harvest units. |
| 3. | Avoid skidding in the bottoms of draws, swales, drainageways, or ephemeral channels. Cross perpendicular to the feature, if required (crossings would be approved by the Sale Administrator). (LRMP SL-1, SL-3, & SL-6; BMP Veg-3.). | All harvest units. |
| 4. | Coarse woody debris greater than twelve inches in diameter already on the ground should be retained and protected to the greatest extent possible during all activities (LRMP SL-1 & SL-6). | All activity areas. |
| 5. | Strive to maintain fine organic matter less than 3-inches in diameter (commonly referred to as the duff layer) over at least 65 percent of an activity area following both harvest and post-harvest operations. Adjust minimum amounts to reflect vegetative capabilities if the potential natural plant | All activity areas. |

- community on site is not capable of producing fine organic matter over 65 percent of the area (LRMP SL-1 & SL-6; Regional Soil Quality Guidelines; BMP Fire-2.).
6. Use old landings and skidding networks whenever possible (except where current resource concerns dictate otherwise). All locations for pre-existing or new yarding and transportation systems to be used for current entry must be approved by the Sale Administrator prior to logging operations (includes all skid trails, landings, and temporary roads) (LRMP SL-1 & SL-3; BMP Veg-4. And BMP Veg-6.). All harvest units.
 7. Maintain spacing of 100 to 150 feet for all primary (main) skid trails, except where converging at landings, to minimize soil impacts. Closer spacing due to complex terrain must be approved in advance by the Sale Administrator (LRMP SL-1 & SL-3, BMP Veg-4). All harvest units.
 8. Grapple skidders would be restricted to primary skid trails, landings, and approved roads at all times. Harvesting machinery would be permitted to leave primary skid trails at 30-foot intervals to cut and accumulate material, making no more than two passes over any piece of ground. Harvesting machinery should make only linear passes out and back, constraining pivots and turns to primary skid trails where feasible (LRMP SL-1 & SL-3, BMP Veg-4.). All harvest units.
 9. Cease operations during periods of high soil moisture or if frozen ground or snow begins to thaw and damage to soil occurs. Some “watch-out” situations include: machine break-through begins to occur; equipment tracks sink deeply (half the width of the track) below the soil surface with one or two passes; ruts greater than six inches deep form; mid-day temperatures are forecast to rise above freezing; surface melt occurs over still-frozen subsurface (LRMP SL-1 & SL-3; BMP Veg-4. & Veg-7.). All activity areas.
 10. If needed, machine piling treatments to reduce fuel loadings or treat logging slash shall be implemented to minimize soil disturbance as follows (LRMP SL-1 and SL-3; BMP Veg-8.):

Restrict grapple piling machinery to designated routes used for harvest operations where fuel loads are moderate or low. Where fuel loads are high, limit off-trail machine travel to no more than two passes on any piece of ground.

Where feasible, turns and pivots should be constrained to primary skid trails to limit soil displacement.

Operators shall plan travel paths to make full use of the machine’s capability (e.g., using full boom reach of machine) to limit ground disturbance and minimize number of off-trail passes needed to achieve treatment objectives.

Where feasible, pile fuels (both hand and machine piles) on logging facilities (i.e. skid trails and landings) in order to minimize additional detrimental soil impacts from burning.
 11. If needed, mastication or other mechanized understory treatments to reduce brush and noncommercial trees shall be implemented to minimize soil disturbance as follows (LRMP SL-1 and SL-3; BMP Veg-8.): All activity areas.

When using a boom-mounted implement, operator shall plan off-trail travel paths to make full use of the machine's capability (e.g., using the full boom reach of the machine) to limit ground disturbance and minimize the number of off-trail passes needed to achieve treatment objectives.

When using a machine with a front-mounted fixed masticating head, work in long, linear swaths to the extent practicable to avoid unnecessary pivoting and turning, which results in soil displacement damage.

Operator should not allow masticating heads or other implements to make contact with the soil surface, which can result in detrimental churning and mixing of the soil.

Machines shall make no more than two passes over any piece of ground (when not on primary skid trails or landings).

Detrimental soil impacts resulting from post-harvest understory treatments shall be isolated and infrequent (less than 5% of the unit area). Detrimental impacts include total removal of surface organics and topsoil, churning/mixing of topsoil with subsoil, rutting greater than six inches deep, and heavy compaction.

- | | | |
|-----|---|--|
| 12. | Rehabilitate all temporary roads created for the current entry. This may include masking/obliterating entrances, subsoiling, utilizing excavator bucket teeth to loosen compacted soils, recontouring cuts and fills, hydrologically stabilizing, seeding, and/or placing fine slash or other organic materials over treated surfaces to establish effective ground cover protection where available. Subsoiling of temporary roads may occur as a post-sale area improvement activity where conditions are appropriate (LRMP SL-1, SL-3, & SL-4; BMP Road-5.). | All harvest units. There is not an anticipated need for temporary roads in this project. |
| 13. | In the event that excavated soil is not immediately replaced or disposed of (or any time a major precipitation event is forecasted), appropriate erosion control practices must be in place to prevent erosion and transport of displaced material. | All activity areas. |
| 14. | Heavy machinery and/or other vehicles would not be operated off-road outside of the identified right-of-way, approved temporary work areas around poles, and routes needed to access temporary work areas. | All activity areas. |
| 15. | Temporary work areas around pole locations and any temporary landings for pole storage should be scarified after work has been completed to encourage infiltration and natural revegetation. If eroding areas or concentrated surface flows are identified during or after project implementation, corrective actions would be taken to minimize erosion hazard. Corrective actions may include, but are not limited to, additional decompaction, recontouring, seeding, or mulching. | All activity areas. |
| 16. | Corrective actions for erosion mitigation within the newly-established ROW would be the responsibility of Midstate Electric. Issues should be addressed proactively, but the Forest Service may request maintenance/corrective action if unaddressed erosion issues are discovered. Evidence of concentrated flow and/or surface erosion, including sheet or rill erosion that cover 100 square feet or more, gully erosion (eroded channels that are deeper than they are wide) of any size, large deposits of sediment on adjacent un-impacted soil | All activity areas. |

sites, or damage to roads would trigger the need for corrective action. Corrective action may include, but is not limited to, installing drainage features (e.g. water bars or rolling dips) on roads, access routes, or work areas, armoring discharge areas, decompacting or scarifying impacted surfaces, applying mulch or other effective ground cover, or seeding with FS-approved seed mixes.

Fuels

Season Industrial Fire Precaution Level (IFPL) restrictions apply, Midstate should call the fire information line prior to implementing project activities during fire season. Midstate would take appropriate fire prevention and suppression measures in conjunction with its operations and maintenance of the ROW. If possible, avoid maintenance of Zone 1 and 2 outside IFPL levels of 2, 3, and 4 unless emergency maintenance is warranted. If emergency maintenance is needed during IFPL levels of 2, 3, or 4 then Midstate would need to obtain a fire waiver.

Pile construction in Zone 1 and 2, if possible, would follow the following specifications:

- Construct hand piles 5 feet or more in height and no less than 4 feet high. Length and width would vary slightly depending on available space. Generally, a well-made pine pile would be 6 feet long, 5 feet wide, and 6 feet tall.
- Long material can be placed on piles and be trimmed with a saw.
- Piles should be compact with slash arranged parallel.
- Material in piles should generally be less than 12 inch in diameter.
- Do not pile logs greater than 12 inches in diameter that are longer than 6 feet. Also, do not pile logs that are mostly rotten. This material should be left within the unit for wildlife.
- Do not place piles directly under power lines or directly on buried gas lines.
- Place piles at least 4 feet from logs and stumps and avoid placing them on rock outcroppings.
- Avoid constructing hand piles within 15 feet of ponderosa pines less than 10 inches in diameter and within 8 feet of all lodgepole pines. This distance may need to be increased with larger piles.
- If working near private land, try to locate piles as far as possible from buildings and property boundaries.
- Do not place rocks on piles to weight them down. They can become a safety hazard when cutting and burning piles.
- Do not place propane tanks, aerosol cans, cartridges, tires, flammables, explosives, or trash of any kind in any of the piles. All personal garbage should be packed out.
- Some units would require piles to be covered with plastic. Check with Fuels Specialists for specifics.

Midstate would notify the District Fuels Specialist of location, size, species, and number of piles once project is complete and during maintenance phase.

The following design criteria are specific to Zone 1:

Avoid constructing landing piles within 50 feet of power poles and within 30 feet of any conifer trees greater than 12 inches diameter at breast height (dbh) and 10 feet tall. Attempt to locate landing piles on east side of ROW to decrease risk of burning existing BPA transmission line. Landing piles in Zone 1 would be burned prior to Midstate installing the transmission line. The Bend-Fort Rock Timber Sales Administrator would direct specific landing pile locations.

Landing piles should consist of a mixture of fine and heavy fuels. Whole piles of chips are not preferred. If a root wad needs to be removed during construction of the line, Midstate would work with the Bend-Fort Rock Fuels Specialists for disposal.

Landing pile size should be approximately 30 feet by 30 feet by 30 feet in size and the Bend-Fort Rock Fuels Specialists would be responsible for burning landing piles.

Fuels Specialists would adhere to the Clean Air Act (CAA) National Ambient Air Quality Standards (NAAQS) and coordinate with Oregon Department of Forestry Smoke Management as per USFS policy when burning piles.

Midstate shall manage the ROW to ensure brush and conifer ingrowth remains less than 2 feet in height. Any debris falling into Zone 1 from Zone 2 would be managed onsite.

The following design criteria are specific to Zone 2:

Midstate would be responsible for conducting regular surveys of Zone 2 to ensure no imminent threat to the transmission line exists. Felling of hazard trees would be the responsibility of Midstate. Midstate would notify the Bend-Fort Rock Special Use Administrator when hazard trees are felled with approximate location and if slash was lopped and scattered or piled. If hand piles are constructed pile specs should be adhered as described above. Course woody debris would be maintained as per LRMP standards.

Scenery

Locate landings, skid trails, slash piles or staging areas using existing openings and skid trails and minimize bole damage to remaining vegetation along scenic travel corridors and access to developed recreation sites (FSR 21 and Finley Butte Road). Flush cut stumps (6 inches or less with angle cut away from line of sight) in Immediate Foreground areas (0 to 300 feet).

Minimize amount of leave-tree markings and black out tagging units with vertical orange paint on both side of trees along scenic travel corridors and access to developed recreation sites after sales close.

Placement of fallen trees shall be parallel along scenic travel corridors with exposed bole not facing the road.

Clean-up activities in Scenic Views High Scenic Integrity Level – SMS (Retention – VMS) treatment areas including landings, skid trails, slash piles or staging and removal of flagging and unit boundary tags and other markings would not be visible to the casual Forest visitor one year after the work has been completed.

Clean-up activities in Scenic Views Moderate Scenic Integrity Level – SMS (Partial Retention – VMS) treatment areas including landings, skid trails, slash piles or staging and removal of flagging and unit boundary tags and other markings would not be visible to the casual Forest visitor one year after the work has been completed.

Cultural Resources

All burn piles would be placed outside of cultural site boundaries

There would be no removal of tree stumps within cultural site boundaries.

If the locations of poles identified as of October of 2016 (when the heritage fieldwork was completed) is changed, additional cultural resource mitigation would need to be conducted prior to implementation.

Should unanticipated cultural resources be encountered during project activities, all ground disturbance near the findings would cease and the Forest Service would be notified immediately. An archaeologist meeting the Secretary of Interior's guidelines for a professional archaeologist would evaluate the findings and consultation with SHPO would occur per 36 CFR 800.13(b).

Avoidance measures would be implemented in sites 35DS412 and 35DS1670.

Proposed road closures would be coordinated with heritage to avoid impacting historic properties.

Hazardous trees in Zone 2 would be hand felled and left in place.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Federal Agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Midstate and the Forest Service looked at the four main corridors that currently exist: BPA utility corridor, TransCanada gas pipeline corridor, US highway 97 and the BNSF Railroad ROW all of which cross BLM and USFS lands. The proposed route (BPA Corridor) is the shortest most direct route between the two substations helping to keep construction and maintenance costs down while adhering to the Forest Plan for locating new utility lines. Midstate and BPA maintain like facilities so they can coexist in adjacent right-of-ways without any issues. The other routes considered had issues that deemed them as unsuitable. Alternatives that were considered but dismissed from detailed consideration and the reasons for dismissal are summarized below.

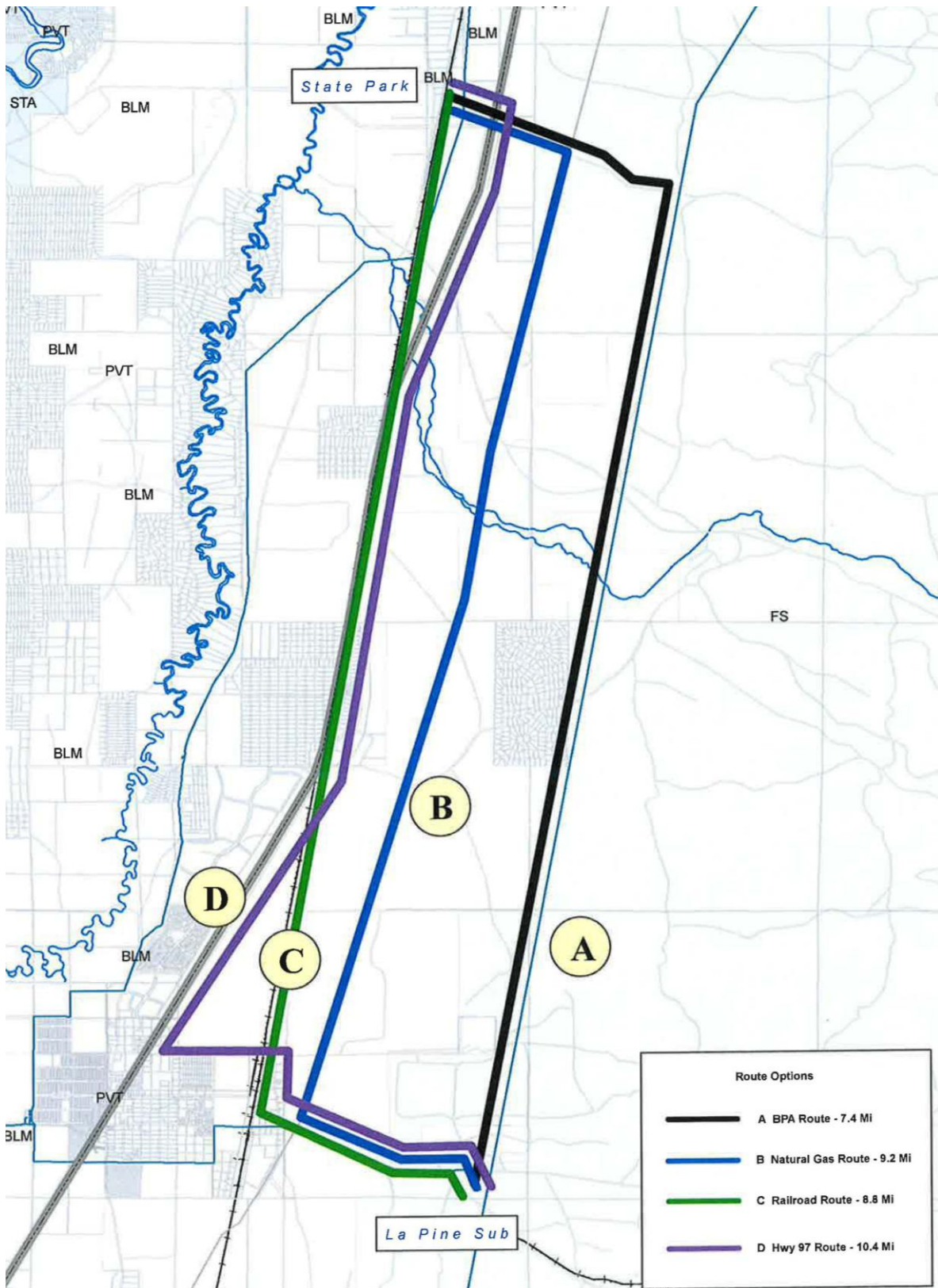


Figure 10 Potential route options Midstate evaluated.

The following alternative options were considered during the development of this analysis but were eliminated from detailed study as described below.

2.4.1 ALTERNATIVE A – BNSF RAILROAD CORRIDOR

Locating in transportation corridors creates a greater negative visual impact, more conflicts with the general public and relocation issues for road construction increasing Midstate's maintenance costs. It is important to minimize visual impacts and maintenance costs. BNSF Railroad did not give Midstate authorization to install the line in their corridor.

2.4.2 ALTERNATIVE B – GAS TRANSMISSION CORRIDOR

Constructing the transmission line along another LRMP designated corridor which currently contains the Gas Transmission pipeline was considered as it is a fairly direct route from one substation to the other. The power company and the Forest Service reviewed this alternative. However, this corridor is easily visible from highway 97. It also passes through the City of La Pine. Also, electric transmission line generate a weak magnetic fields generated along the route of the power line. If any potential conductor, like a pipeline, is constructed in a relatively close proximity, those magnetic fields can produce small amounts of electric current in that conductor. As a result, that current can cause a reaction with the pipe material and cause cathodic corrosion. But the most concerning issue about building the transmission in the pipeline ROW is because it is not wise to have utilities which can produce sparks and next to flammable items.

2.4.3 ALTERNATIVE C – HIGHWAY 97

If Midstate constructed the transmission line in the Highway 97 Corridor, it would have a negative impact on visuals. It would also create conflicts with the public and reduce reliability of the line as the possibility of pole impact from vehicles is greatly increased due to the amount of traffic on the highway and the winter icy road conditions. Currently, Oregon Department of Transportation is in the early planning stages of widening the two-lane highway into a 4-lane, divided highway. Relocation issues would also arise whenever road construction increasing MEC's maintenance costs.

2.4.4 ALTERNATIVE D – KELLDANO/SPECTRA RANCH

Midstate also proposed an alternative route around the private property located along the BPA ROW in Township 21 South, Range 11, Section 29, W.M. When the landowner denied access to cross his ranch, the route around the property was considered. This route would have crossed through wetlands and riparian areas. In 2016, the ranch was sold and the new owner approved that the Midstate Transmission Line could cross his property, adjacent to the BPA ROW. Once the landowner agreed to allow the line to cross his property, the Forest Service no longer considered the route around the ranch to be viable due to the increased impact to resources.

CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter discusses the existing condition of resources in the Midstate project area and discloses the direct, indirect, and cumulative effects of the action alternatives (including the no action) would be expected to have on resources. The duration of these effects may vary depending on the resource in question. This chapter concludes with a discussion of specifically required disclosures.

3.2 CUMULATIVE ACTIONS AND ACTIVITIES

Cumulative effects are analyzed in this chapter. All known present and reasonably foreseeable future activities used by the Interdisciplinary team for their cumulative effects analyses. In general, the analysis area would be the project area. If the resource being analyzed necessitates extending the analysis area outside the project area for an appropriate analysis, then the extent of the analysis area is documented under each resource area below and in the specialist reports located in the project record.

For the purposes of this EA, the cumulative impacts are the sum of the existing condition (which represents all past actions), present actions, and reasonably foreseeable future actions. Reasonably foreseeable as defined in 36 CFR 220.3 are those Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals. Identified proposals for the Forest Service are those that the Forest Service has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated (36 CFR 220.4 (a)(1)). The purpose of the cumulative effects analysis in the EA is to evaluate the significance of the no action and action alternative contributions to cumulative impacts. A cumulative impact is defined under federal regulations as follows:

"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

In order to understand the contribution of past actions to the cumulative effects of the alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environments and might contribute to cumulative effects. "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions" (40CFR 1508.7). This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action by action basis. One reason for taking this approach is because focusing on past individual actions would be less accurate than looking at the existing condition, because there is limited information on environmental impacts of individual past actions and no one can reasonably identify each and every action over the last century that has contributed to the existing condition.

Forested stands along the proposed right-of-way have recently been treated under the Thor and Odin timber sales (Ogden EIS 2012), Dice timber sale (Lavacast EA 2009), Crossing Fuelbreak (2005) and Bureau of Land Management (BLM) fuelbreak treatments adjacent to Hwy 97 (Figure 11 through Figure 13).

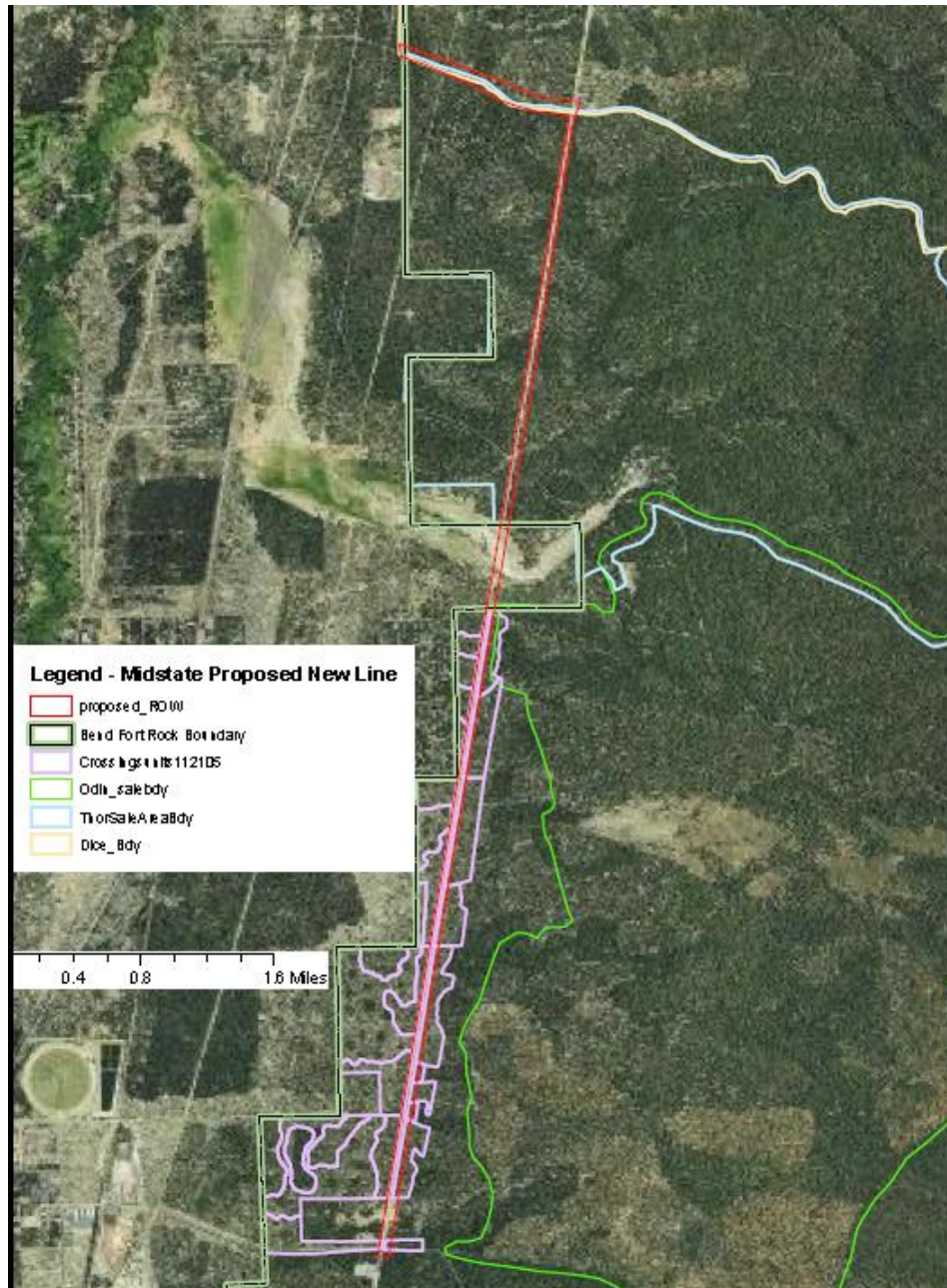


Figure 11 Aerial overview of the proposed line and overlapping vegetation management treatments

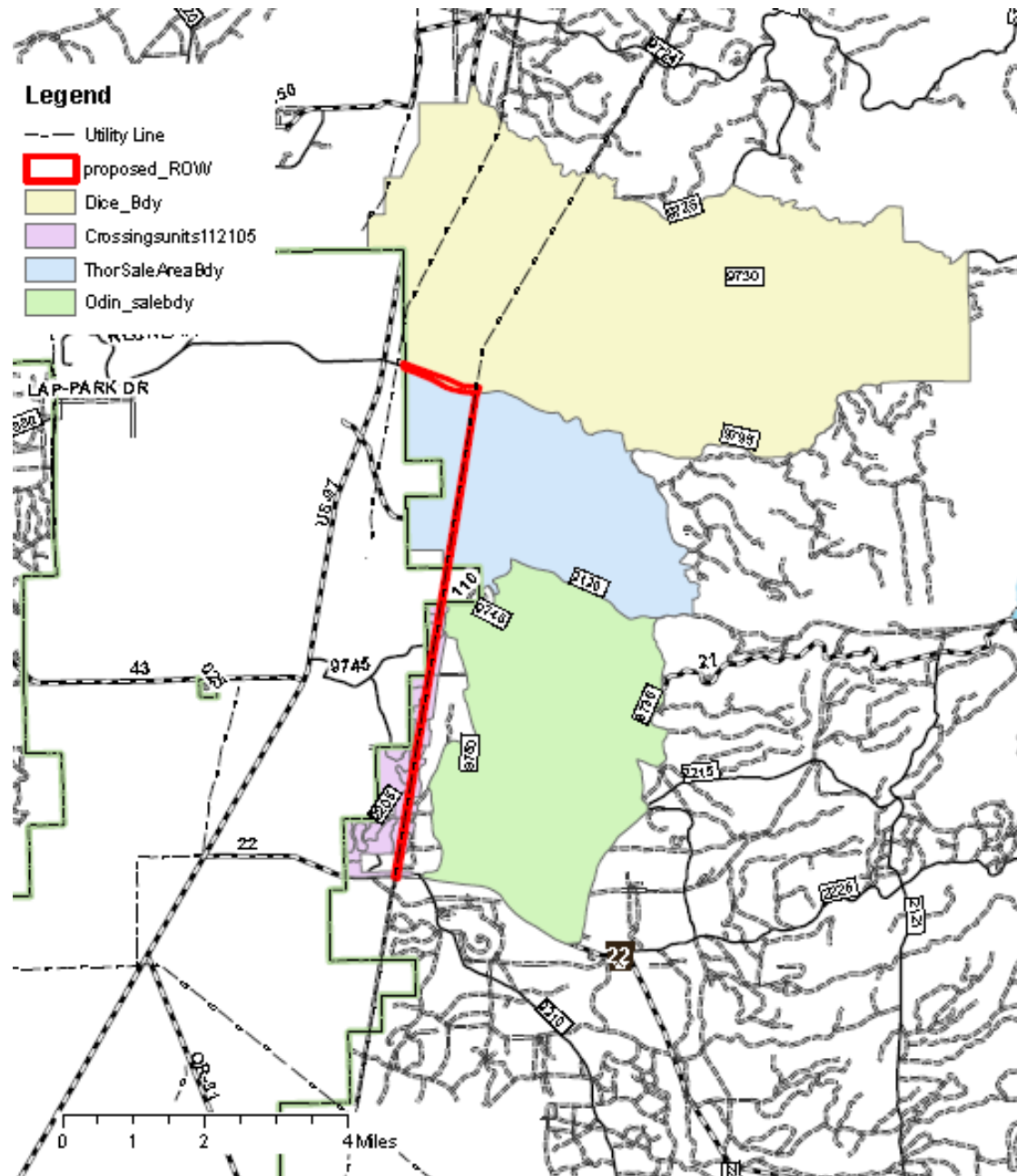


Figure 12 Timber sale boundaries used for cumulative effects analysis.

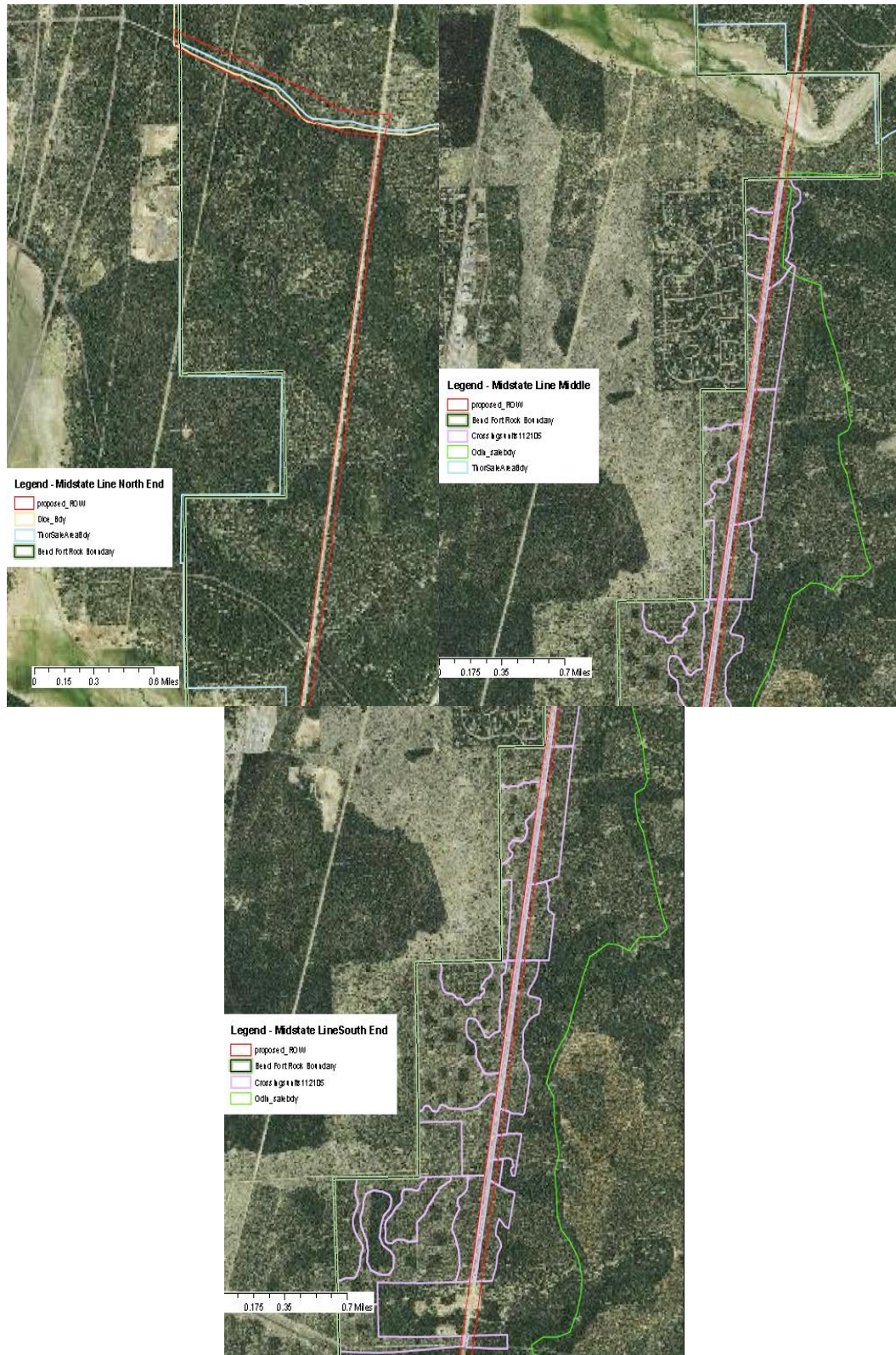


Figure 13 Break out section of the proposed line, the surrounding landscape, and overlapping vegetation management projects.

3.3 BEST AVAILABLE SCIENCE

Forest Service policy is that proposed projects must be consistent with the Forest Plan and other management direction show consideration of “best available science” (Dillard 2007). Science is not absolute or irrefutable and much of what we know in a science context is constantly evolving (Moghissi et al. 2008). This means what constitutes best available science might vary over time and across scientific disciplines (Dillard 2007). An objective of considering best available science is for scientists “to provide a meaningful context to scientific information so that its validity might be judged and therefore useful to the policymaker” (Moghissi et al. 2008).

Analysis information provided in this EA was based on a variety of methodologies, models, and procedures (depending on the resource) all of which are derived from scientific sources included in the Literature Cited section. This EA and the accompanying project record identify methods used, reference reliable scientific sources, discuss responsible opposing views, and disclose incomplete or unavailable information, scientific uncertainty, and risk (See 40 CFR 1502.9(b), 1502.22, and 1502.24). Personal opinions were generally judged not to be best available science. Peer-reviewed science was evaluated, and the Forest Service recognized the value to independent peer review. All Forest Service research literature is peer reviewed following USDA Information Quality Scientific Research Guidelines.

3.4 ALTERNATIVE EVALUATION

The specialist reports, biological assessments, and biological evaluations in adequate detail to support the decision rationale are maintained in the project record (Chapter 1.9 Project Record).

3.4.1 WILDLIFE

Potential impacts resulting from the proposed Midstate Transmission Line project, to terrestrial wildlife species listed by the U.S. Fish and Wildlife Service as Endangered, Threatened or Proposed under the Endangered Species Act of 1973, as amended and USDA Forest Service Pacific Northwest Region Regional Forester Sensitive Species, Management Indicator Species, migratory birds and shore birds are discussed in this section.

The Biological Evaluation meets direction in Forest Service Manual 2630.3, FSM 2670-2671, FSM W.O. Amendments 2600-95-7 and the Deschutes National Forest (DNF) Land and Resource Management Plan (LRMP) (USDA FS 1990). This project area is within the Environmental Assessment for the Continuation of Interim Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales (Eastside Screens) (USDA FS 1995).

Analysis Boundaries

The analysis boundary for direct and indirect effects is the proposed powerline corridor that includes the hazard tree right-of-way area (Zone 1 and Zone 2 for a total of 102 acres on FS lands). For cumulative effects the boundary is made up of all the adjacent timber sale areas as shown in Figure 11 through Figure 13. This is a total acreage of 34,821 acres. In order to appropriately use the DecAID tool to analyze effects to snags and downed wood, an analysis area of at least 13,489 acres of ponderosa pine habitat within and adjacent to the project area was used. The ponderosa pine habitat type is the only wildlife habitat affected by the proposed action, therefore it is the only one considered when using the DecAID tool.

Within the boundary for direct and indirect effects, the existing habitat is made up of the BPA powerline corridor to the immediate east and mature ponderosa pine/lodgepole pine stands with varying densities of trees due to current or past harvest to the immediate west. The current BPA transmission line right-of-way is clear of trees and most shrubs, as well as containing an access road through it. The section of proposed line that runs at the northern end and in an east/west direction,

crosses Hwy 97 to connect to an existing substation and the proposed transmission line corridor would border the FSR 9735 to the south and run through harvested stands in the north. These stands are now open ponderosa pine due to recent harvest by the Deschutes National Forest (Dice Timber Sale) and Bureau of Land Management harvesting along the Hwy 97 corridor.

The cumulative effects bounding relies heavily to the east and north because to the west of the proposed right-of-way is the Deschutes National Forest boundary, private resident subdivision, and Bureau of Land Management (BLM) lands. Private land and BLM lands are not managed the same (e.g. different standards and guidelines) as Forest Service lands. To the east are more extensive ponderosa pine/lodgepole pine stands that have received various levels of treatment.

Wildlife Species Listed under the Endangered Species Act of 1973, as amended

The following table provides a list of Proposed, Endangered, or Threatened species or their designated critical habitat (listed by USFWS under ESA) with potential to occur on the Deschutes National Forest.

Table 4 Federally listed species occurrence in the project area.

Species & Status (Natureserve State Ranking)	Basic Habitat Description	Known or Suspected to be Present in/near Project Area	Suitable Habitat Present in/near Project Area	Designated Critical Habitat Present or Affected
FEDERALLY LISTED AMPHIBIANS				
Oregon spotted frog (T) (S2 – Imperiled)	Slow streams, marshes, ponds & lake edges	No	No	--
Oregon spotted frog Critical Habitat		--	--	No
FEDERALLY LISTED BIRDS				
Northern spotted owl (T) (S3 Vulnerable)	Old growth mixed conifer forest with Douglas fir & true firs	No	No	--
Northern spotted owl Critical Habitat		--	--	No
FEDERALLY LISTED MAMMALS				
Gray wolf (E) (S1 Critically Imperiled)	Occupied wolf range	No	No	--
Wolverine (P) (S1 Critically Imperiled)	High elevation mixed conifer forest	No	No	

Gray Wolf

There are no known wolf activity centers, established packs, den sites or rendezvous sites on the Deschutes National Forest. In addition, no dispersal has been documented within the project area. The project area does not meet the definition of occupied wolf range. The proposed project would have no direct, indirect, or cumulative effects. Implementation of the proposed project would have no effect on gray wolf.

Northern Spotted Owl

The project area is outside the range of the northern spotted owl, therefore there would be no effect to this species or its designated Critical Habitat. No further analysis is required.

Oregon Spotted Frog

No habitat exists for the Oregon spotted frog within the project area. No Oregon spotted frog Critical Habitat exists within the project area. There is *no effect* to the Oregon spotted frog as a result of the project. No further analysis is required.

North American Wolverine

On the Deschutes National Forest, wolverines may travel through and or forage infrequently at lower elevations on the district, particularly the existing powerline corridor and any adjacent stands, but utilize higher elevations for most of their needs. Because of the low likelihood of presence, that would be transient/temporary at best, *no effect* to wolverines are expected.

Region 6 Sensitive Wildlife Species

The following table lists Region 6 Sensitive Species that are either documented or suspected on the Deschutes National Forest. The species in Table 5 shown in bold have potential habitat in the project area and are discussed in detail below. Those species that do not have potential habitat within the project area would not be discussed further.

Table 5 Occurrence of R6 sensitive species.

Species (Natureserve State Ranking)	Basic Habitat Description	Known or Suspected to be Present in/near Project Area	Suitable Habitat Present in/near Project Area
SENSITIVE AMPHIBIANS			
Columbia spotted frog (S2 Imperiled)	Slow streams, marshes, ponds & lake edges	No	No
SENSITIVE BIRDS			
Northern bald eagle (T5 Secure – state not available)	Lakeside or riverside with large trees	No	No
Bufflehead (S2 Imperiled)	Snags associated with lakes	No	No
Harlequin duck (S2 Imperiled)	Rapid streams with large trees	No	No
Tricolored blackbird (S2 Imperiled)	Riparian, Cattails	No	No
Yellow rail (S1 Critically Imperiled)	Marshes/wetlands	No	No
Greater sage grouse (western) (S3 Vulnerable)	Sagebrush flats	No	No
American peregrine falcon (S2B Imperiled)	Riparian & cliff habitats	No	No
Lewis' woodpecker (S2 Imperiled)	Open ponderosa pine forest with large diameter dead/dying trees or burned forest	No	Yes
White-headed woodpecker (S2 Imperiled)	Mature ponderosa pine forest with large diameter snags	No	Yes
Northern waterthrush (S2 Imperiled)	Dense riparian willows	No	No
Horned grebe (S2 Imperiled)	Lakes with emergent vegetation	No	No
Tule goose (S2S3N Imperiled-Vulnerable)	Seasonal migrant – spring & fall, wetlands with emergent vegetation	No	No
SENSITIVE MAMMALS			
Pacific fisher	Mixed conifer & riparian with complex	No	No

Species (NatureServe State Ranking)	Basic Habitat Description	Known or Suspected to be Present in/near Project Area	Suitable Habitat Present in/near Project Area
(S2 Imperiled)	structure		
Townsend's big-eared bat (S2 Imperiled)	Caves, mines, bridges, rock crevices and old buildings	No	No
Pallid bat (S2 Imperiled)	Arid desert or grassland with rock crevices, caves, old mines, trees or old buildings	No	No
Spotted bat (S2 Imperiled)	Caves & rock crevices	No	No
Fringed myotis (S2 Imperiled)	Caves, mines, rock crevices, desert, grassland, woodland	No	No
Sierra Nevada red fox (S1 Critically Imperiled)	High elevation forest, shrub and meadow	No	No
SENSITIVE INVERTEBRATES			
Crater Lake tightcoil (S2 Imperiled)	Perennially wet riparian	No	No
Shiny tightcoil (SH Possibly Extirpated)	Aspen stands within ponderosa/Douglas-fir forest	No	No
Silver-bordered fritillary (S2 Imperiled)	Wet meadow, bog or marsh with floral resources	No	No
Johnson's hairstreak (S2 Imperiled)	Coniferous forest, especially old growth with mistletoe	No	Yes
Western bumblebee (Not Ranked)	Areas with abundant floral resources, rodent burrows, bunch grass or other nesting structure	No	Yes

Western Bumblebee Existing Condition

This species has been observed on the District, but there is currently no District or Forest data to determine acres of suitable habitat. Since there are flowering plants within the project area, it is assumed that it may potentially provide western bumblebee habitat. The project area does contain bitterbrush, ceanothus, and manzanita whose flowers can be used by bumblebees. Habitat for nest sites and hibernation sites are also likely available within the project area because rodent burrows have been seen in the project area.

Western Bumblebee Effects

Impacts to flowering plants and potential nest sites or hibernation sites was used to evaluate effects on the western bumblebee.

Alternative 1 – Direct, Indirect and Cumulative Effects

Alternative 1 would result in no immediate impact to western bumblebees because no actions would occur to reduce flowering plant populations or alter or destroy nest and overwintering sites. This alternative does not result in direct and indirect impacts to the western bumblebee; therefore, there would be no cumulative effects.

Alternative 2 – Direct and Indirect Effects

The action alternative would result in the temporary crushing of flowering plants by vehicular traffic (after project completion, flowering plants, especially the dominant forbs are expected to recover)

and potential destruction of nest/overwintering burrows by large machinery. Construction of a new powerline and the removal of hazard trees may also introduce new vectors for invasive plants that would compete with native flowering plants. Although bumblebees are known to use some flowering invasive plants (e.g. vetch, knapweed, and thistle), they do not use invasive plants such as cheatgrass.

Construction impacts are expected to be short-term, as the potential to destroy a nest/overwintering burrow would diminish after project activities are complete and flowering shrubs and other flowering plants re-grow and rodents re-colonize the area. The expanded corridor would remain in an open condition, allowing for flowering shrubs and forbs to dominate.

Alternative 2 – Cumulative Impacts

Past actions have opened the forested canopy and allowed the growth of shrubs in areas not treated by mowing and prescribed fire.

The use of heavy machinery from the proposed project in combination to past work has the potential to collapse rodent burrows and other potential bumblebee overwintering sites. It may take years for the soils to recover and allow new burrows. In adjacent areas this did not occur of 100% of the units, therefore some nesting/hibernation habitat is still available. Flowering shrubs and forbs are expected to recover after the project and therefore have no long-term cumulative effects.

Introductions of invasive plants are a constant threat in this area due to its location near private land. Invasive plants have been treated in the area, and would continue to be treated.

Determination

The action alternative would impact western bumblebees because the clearing for the expanded right-of-way would have a high potential to destroy nest/overwintering burrows, reduce the amount of food source available by crushing plants during harvest treatments, and provide an added vector for invasive plants. However, the area impacted is relatively small and its location close to private land reduces the ability to improve habitat conditions for this species. There is potential habitat maintained on forest land to the east that has not been treated. Based on these assumptions, the project *may impact individuals or habitat, but would not likely contribute to a trend toward federal listing for the western bumblebee.*

Johnson's Hairstreak Existing Condition

This small, three-quarter inch uncommon butterfly ranges from southern British Columbia, south through eastern and western Washington, and western Oregon, to central and south California. This butterfly species depends on coniferous forests that contain dwarf mistletoes (genus *Arceuthobium*) found in western hemlock, red fir, and Jeffrey pine (NatureServe 2012). Although there are not these tree species with the proposed project area, the area does contain some mistletoed pine.

Johnson's Hairstreak Effects

To evaluate impacts to Johnson's hairstreak the availability of dwarf mistletoe was used.

Alternative 1 – Direct, Indirect, and Cumulative Effects

This alternative would result in no immediate impact to Johnson's hairstreak because no vegetation management actions would occur to reduce mistletoe populations. Potentially suitable habitat would be maintained based on the scattered presence of mistletoe across the project area and adjacent areas.

Alternative 2 – Direct and Indirect Effects

Although not part of the purpose and need of the project, the action alternative would likely result in the reduction of mistletoed trees because it includes an element of removing trees in order to make the clearing for the powerline, and some of these trees are bound to have mistletoe. The trees to be

removed are not commonly associated with the host trees species of this butterfly. Although the project would not replant trees or promote the re-establishment of the stands because it would not meet the purpose and need of this project, the footprint of the action is relatively small (102 acres) and mistletoe would remain on the landscape.

Alternative 2 – Cumulative Effects

The Thor and Odin timber sales intend to maintain a resilient and healthy stand that would reduce the occurrence of mistletoe in the canopy. The Crossings project had similar results except the purpose being to reduce fuel loadings next to private land. The extent of the treatments within these sales are larger than that of the trees within the powerline corridor and hazard removal area (the 102 acres), and some of the powerline corridor overlaps the sales. This overlap and larger extent does contribute cumulative effects Johnson's hairstreaks through the loss of mistletoe habitat, however the tree species that are more commonly thought of as hosts for the mistletoes with which this butterfly species is associated are not found within the proposed powerline area. The additive effect from this proposal is not measurable.

Determination

Within the analysis area, mistletoe (i.e. thus potential hairstreak habitat), would be reduced but not completely removed. This effect would be additive to the complete removal of trees (i.e. all mistletoe/potential hairstreak habitat) within the Zone 1. Although there are cumulative effects, overall impacts to hairstreak habitat are reduced by having the powerline run alongside an existing powerline corridor, thereby by minimizing the amount and effect of the clearing. It is assumed species habitat would still be available in surrounding stands. Based on these assumptions, the project *may impact individuals or habitat, but would not likely contribute to a trend toward federal listing for the Johnson's hairstreak.*

Lewis' Woodpecker Existing Condition

An aspect of Lewis' woodpecker habitat is old-forest, single-storied ponderosa pine. This species was also identified as a focal species for ponderosa pine with patches of burned old forests for the East Cascades Landbird Strategy, as it is highly associated with post-fire environments. This type of habitat also does not occur in the project area. Therefore, effects to Lewis' woodpecker habitat would be discussed as it relates to old-forest ponderosa pine.

Current estimates of Lewis' woodpecker nesting habitat was mapped using the drier ponderosa pine forests in the early, mid and late seral stages. In addition, other plant association groups where ponderosa pine is the dominant species in the early and mid-seral stages was mapped as habitat. Stand size had to be a minimum diameter of 15 inches dbh or greater and have open stand characteristics to be mapped as potential habitat. Older fires (greater than 5 years old) were added as habitat. Recent (since 2002) forest management activities that resulted in conditions other than described above were removed from mapped potential habitat. Large snag densities were determined using similar information as the habitat mapping but with an updated (through 2012) data layer.

Lewis woodpecker habitat and large (>20" dbh) snags are uncommon in the project area and adjacent lands. The analysis area was ponderosa pine habitat within the Ogden Planning Area of which the Thor and Odin timber sales are derived. Large snags are likely rare in the project area due to its proximity to private land and adjacent to an existing powerline corridor that is maintained for open conditions. There is no mapped habitat within the proposed corridor expansion. Field surveys of the powerline and adjacent stands did not detect any Lewis' woodpeckers.

Lewis' Woodpecker Effects

Potential habitat loss (acres) and contribution to Landbird conservation strategies were evaluated when determining the effects this project has on Lewis' woodpecker.

Alternative 1 – Direct, Indirect, and Cumulative Effects

The no action alternative may address some habitat components in the sense that a shrubby understory is being promoted. However, the conservation strategies to allow wildfires to burn, retaining dead or diseased trees where they occur and closing roads are difficult to attain because of the current BPA powerline corridor and continued use of its access road and need to reduce hazard trees, as well as the proximity to private residences. Therefore, Lewis' woodpecker habitat would likely continue to be minimal to absent in the project area. A wildfire, should it break out, would be a priority to put out and/or minimize the area impacted due to its locations to the BPA line and private lands, limiting the amount of Lewis' woodpecker habitat created by natural disturbance.

Loss of snags because they are a safety hazard to humans would continue to occur and have an impact on Lewis' woodpeckers because they often utilize the large, well-decayed snags that are often identified as the highest safety risk. The existing BPA poles themselves, as they age, may briefly serve as habitat until they are replaced. Landscape level analysis of >20 inch dbh snag densities within ponderosa pine habitat shows that for the analysis area clusters (>2 snag/ac) are uncommon.

Alternative 2 – Direct and Indirect Effects

The proposed action would have direct impacts to potential Lewis' woodpecker habitat because any snags and large trees would be fallen and removed in the process of clearing the right-of-way and in Zone 2 hazard trees that could hit the line would either be felled or topped. The ROW would be maintained in an open condition, therefore Lewis' woodpecker habitat (i.e. recruitment of large snags) would not develop. The poles themselves, as they age, may briefly serve as habitat until they are replaced. An option to only top large trees (>21" dbh) in the hazard tree zone, if they pose a hazard and the tree could safely be topped, would be a way to promote large snag recruitment while also mitigating the hazard.

Although the amount of Lewis' woodpecker habitat impacted by the proposed action is small when considering the amount of habitat on the Forest, it would not likely be replaced or be allowed to develop within the ROW and with ongoing maintenance. This is to say, the removal of any potential habitat is long term.

Alternative 2 – Cumulative Effects

The proposed action within the ponderosa pine habitat would result in an overall longterm loss of Lewis woodpecker habitat because ponderosa pine snags would not develop. Cumulatively, this would contribute to the short-term reduction in habitat due to the adjacent timber sales. Over time however, the adjacent timber sale areas would allow for the development of Lewis' woodpecker habitat, whereas within the expanded powerline corridor no habitat would be allowed to develop. It is estimated that it would be another 50 years before the stands of larger diameter trees in the adjacent timber sale area would be susceptible to beetle mortality. Only when these newly created larger pine snags have been dead for years and in further stages of decay, would new Lewis woodpecker habitat be created; or unless a wildfire occurs within or adjacent to the project area. The development of Lewis' woodpecker nesting habitat would not be realized for many decades.

Determination

Although the proposed action would result in a longterm loss of habitat (i.e. no large snag development), it represents an area that is currently not providing any nesting habitat. Due to its location near private land and providing a vital service (electricity to the adjacent communities) it is unlikely that Lewis' woodpecker would ever develop within the project area. Based on the direct, indirect, and cumulative effects, the proposed action *may impact individuals or habitat of the Lewis' woodpeckers but not likely contribute to a trend towards federal listing* because the area of these lasting impacts is small (less than one-one hundredth of a percent of the habitat on the Forest and the

project area is currently not providing nesting habitat. The project is consistent with the Forest Plan, and as such, continued viability of Lewis' woodpeckers is expected on the Deschutes National Forest.

Because the habitats for which this species is a Landbird focal species do not exist within the project area, the conservation strategies detailed as a focal species do not apply. The project would neither contribute to nor deter from the strategies for ponderosa pine habitat due to its proximity to private land and adjacent to an established powerline corridor.

White-headed Woodpecker Existing Condition

White-headed woodpecker (WHWO) nesting habitat was mapped using ponderosa pine dominated forests which include all ponderosa pine plant association groups (PAGs) in all seral stages (early, mid, late) in addition to other PAGs (i.e. dry white fir) in the early and mid-seral stages where ponderosa pine is dominant. In addition, stand size had to be a minimum diameter of 10 inches dbh or greater and have open stand characteristics (based on the canopy cover level thresholds for each PAG) to be mapped as potential habitat. Recent fires (less than 5 years old) with stand replacement or mixed severity were also classified as habitat. Recent (since 2002) forest management activities that resulted in conditions other than described above were removed from mapped potential habitat. The resulting nesting habitat was then quantified by applying the DecAID PPDF_S/L.sp22 table tolerance levels.

Table 6 Existing snag distribution ≥ 10 inches dbh in WHWO nesting habitat on the Deschutes National Forest and the Project analysis area.

Tolerance Level	Snags/Acre	Total Forest-wide Potential WHWO Nesting Habitat Acres	% of Habitat Forest-wide	% of WHT in Analysis Area
0	0	101,219	51%	69%
0-30%	0-0.5	2,930	28%	21%
30-50%	0.5-1.9	36,722		
50-80%	1.9-4	16,243		
80%+	4+	41,215	21%	9%
Total		198,329	100%	99%
Based on DecAID Version 2.2: Table PPDF_S/L.sp-22				

Table 7 Existing snag distribution ≥ 20 inches dbh in WHWO nesting habitat on the Deschutes National Forest and in the project analysis area.

Tolerance Level	Snags/Acre	Total Forest-wide Potential WHWO Nesting Habitat Acres	% of Habitat Forest-wide	% of WHT in Analysis Area
0	0	147,469	74%	87%
0-30%	0-0.5	4,749	14%	9%
30-50%	0.5-1.8	24,014		
50-80%	1.8-3.8	7,545	4%	3%
80%+	3.8+	14,555	7%	1%
Total		198,332	99%	100%
Based on DecAID Version 2.2: Table PPDF_S/L.sp-22				

White-headed Woodpecker Effects

Potential habitat loss (acres) and contribution to Landbird conservation strategies were evaluated when determining the effects this project has on white-headed woodpecker.

Alternative 1 – Direct, Indirect, and Cumulative Effects

Although currently habitat for the white-headed woodpecker is provided at low levels, habitat would continue to develop in the areas of past treatments adjacent to the project area (e.g. Thor, Dice, and Odin timber sales).

Figure 14 shows the recruitment of snags, and white-headed woodpecker nesting habitat in the adjacent timber sales. As one can see in year 2010 there were few snags >20 inches dbh, but over 5 snags/ac between 15 and 20 inches dbh. Over time the overall density of snags >15 inches dbh falls but there is an increase in the amount of large diameter snags (>20 inches dbh) being recruited. This modeling suggest that the no action alternative would not provide nesting habitat for white-headed woodpeckers at greater than the 30% tolerance level. However it would eventually contribute to the conservation actions for this species.

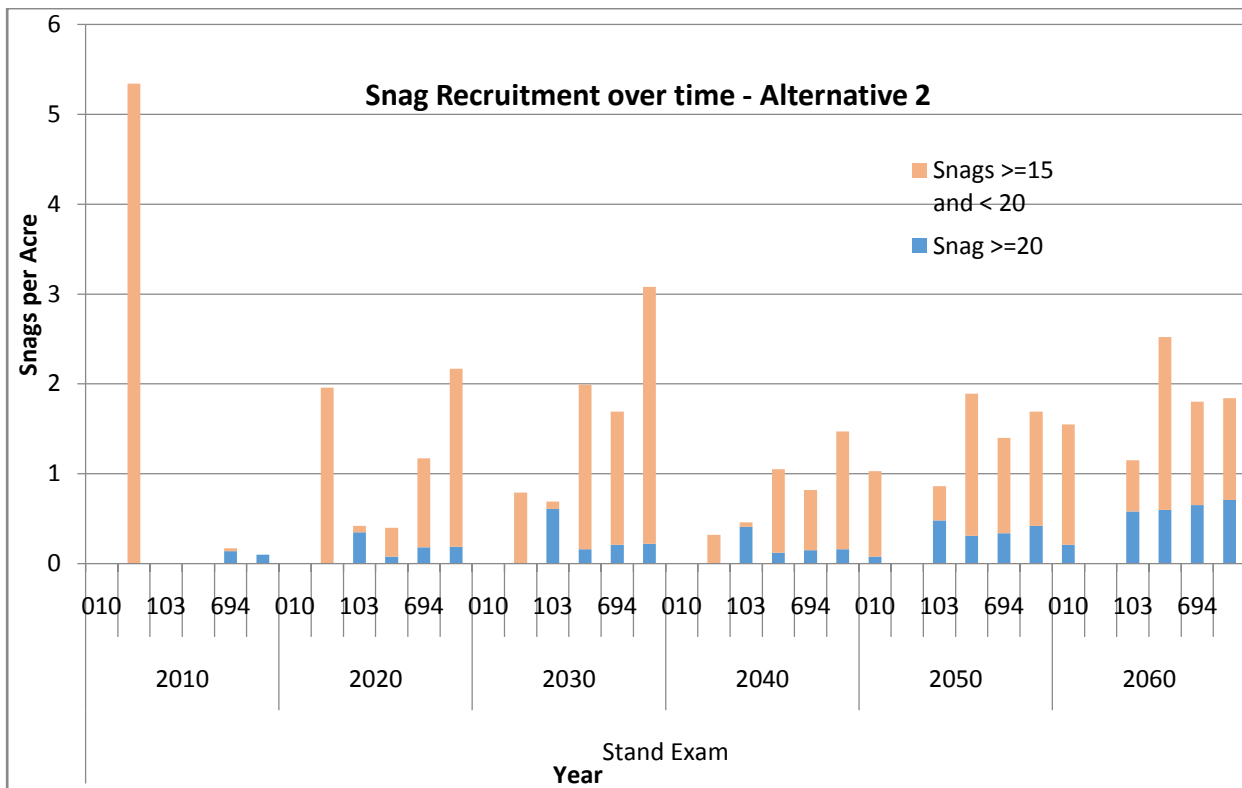


Figure 14 Recruitment of snags in ponderosa pine in the Thor and Odin timber sales based on FVS runs in representative stands.

Alternative 2 – Direct and Indirect Effects

The transmission line would need to be maintained for clearing distances and hazard trees, therefore it is assumed that white-headed woodpecker would not return within Zone 1. Topping large trees deemed a hazard, may create some nesting substrate for this species.

Currently there is no white-headed woodpecker habitat within the existing BPA transmission line corridor. Expansion of the corridor for the proposed line would occur on one side (40 feet wide) and adjacent to the BPA corridor where large snags in the area are rare and smaller snags are widely scattered (Table 6 and Table 7). The juxtaposition of the habitat on the landscape (i.e. next to private land and adjacent to an existing corridor) also diminishes its value as white-headed woodpecker habitat.

The proposed action would remove, for the longterm, low quality habitat for the white-headed woodpecker within this right of way (Zone 1). It would not contribute to the conservation actions for

this species. Due to the nature of this project certain strategies are not applicable as discussed throughout the EA (Chapter 1.2 Proposed Action and

1.5 Management Direction).

Alternative 2 – Cumulative Effects

Recent timber sale projects within the analysis area have focused on managing for ponderosa pine development and sustainability. Therefore this project would impact an added 102 acres (Zone 1 and Zone 2) of current low quality habitat. These acres reflect <1% of the nesting habitat on the Forest. Modeling of tree growth and snag recruitment in six selected ponderosa pine stands supports the conclusions that over time, the cumulative area would recruit larger diameter snags in the ponderosa pine habitat (Figure 14).

Determination

The project *may impact individuals or habitat but is unlikely to contribute towards a trend to federal listing*. Because this project impacts <1% of the suitable habitat across the Forest, the overall direct, indirect and cumulative effects would contribute to a small negative trend of habitat. The loss of habitat would be minimal at the Forest scale, and the intensity of the effect is low because the project occurs in an area currently of low habitat quality and juxtaposed with human developments (private land and utility corridor). The proposed action is consistent with the Forest Plan, and this continued viability of the white-headed woodpecker is expected on the Deschutes National Forest.

Forest Plan Wildlife Management Indicator Species

The Deschutes National Forest Land and Resource Management Plan (USDA FS 1990) identified a group of wildlife species as management indicator species (MIS). These species were selected because they represent a larger group other species with similar habitat requirements. Management indicator species can be used to assess the effects of management activities for a wide range of wildlife species with similar habitat needs (USDA FS 1997).

Snags and Down Wood

Dead wood (standing or down) plays an important role in overall ecosystem health, soil productivity and habitat for numerous wildlife species. Many bird and mammal species rely on dead wood for dens, nests, resting, preening, roosting, perching, courtship, drumming, hibernating and/or feeding for all or parts of their life cycle.

The Decision Notice for the Continuation of Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales (known as the Eastside Screens) addresses the need for project design to include the principles of landscape ecology and conservation biology (USDA FS 1995). Screen 3, the Wildlife Screen, represents direction and parameters based on general scientific principles and concepts. The purpose of the Wildlife Screen is to maintain options in the short-term for the conservation of wildlife species associated with late and old structural stages in eastern Oregon and Washington.

Specifically the direction for snags and down woody material are: 1) maintaining snags and green tree replacements (GTRs) ≥ 15 inches DBH at 100% maximum potential population (MPP) for all vegetation types except lodgepole pine; 2) for lodgepole pine, maintain snags and green tree replacements > 10 inches DBH at 100% MPP; and 3) down logs ranging between 3 and 20 pieces per acre depending upon vegetative series (Table 8).

Table 8 Forest Plan down wood requirements

Timber Sale Activities

Tree Species	Pieces per acre	Diameter Small End	Piece Length	Total Lineal Length
Ponderosa pine	3-6	12 inches	>6 feet	20-40 feet
LRMP Snag and Green Tree Replacement (GTR) Requirements (USDA FS 1994b)				
	Habitat Type			
	Ponderosa Pine (>15in DBH)	Mixed Conifer (>15 in DBH)	Lodgepole Pine (>10in DBH)	
100% MPP	4 snags per acre	4 snags per acre	6 snags per acre	
GTRs (at 13-19 in DBH residual stand)	8 trees per acre	8 trees per acre	6 trees per acre	

The DecAID Advisor (Mellen-McLean et al 2012) was used as the best available science for the project snag analysis. Snags and down wood would be addressed as they relate to size, density, and distribution by habitat type for the entire analysis area, which is considered the zone of influence for measuring cumulative effects. Because the project area is small and the proposal narrow in scope, a larger area was needed in order to address effects to snags and downed wood, but not so large as to make the effects of the project indistinguishable. Analyzing snags and downed wood in the project area and adjacent combined sale areas (Ogden Planning Area incorporates the Thor, Odin, and Crossings Sale areas) provides enough of the habitat type to be analyzed (12,800 acres minimum) to meet the best available science criteria for describing the project effects to dead wood using the DecAID tool.

Snags Existing Condition

Figure 15 below, for snags ≥ 10 inch dbh within the analysis area, the current condition in ponderosa pine has approximately 14% greater than the reference condition for the no snag class. All other density categories are slightly below reference conditions, most notably the >8 snags per acre categories which together are currently 2% compared to the 13% reference. The green boxes show the snag densities found at 50% of the nest sites of that species according to the literature (i.e. TL = tolerance level). Most of the analysis area is not providing high quality habitat (i.e. $\geq 50\%$ tolerance level) for these species.

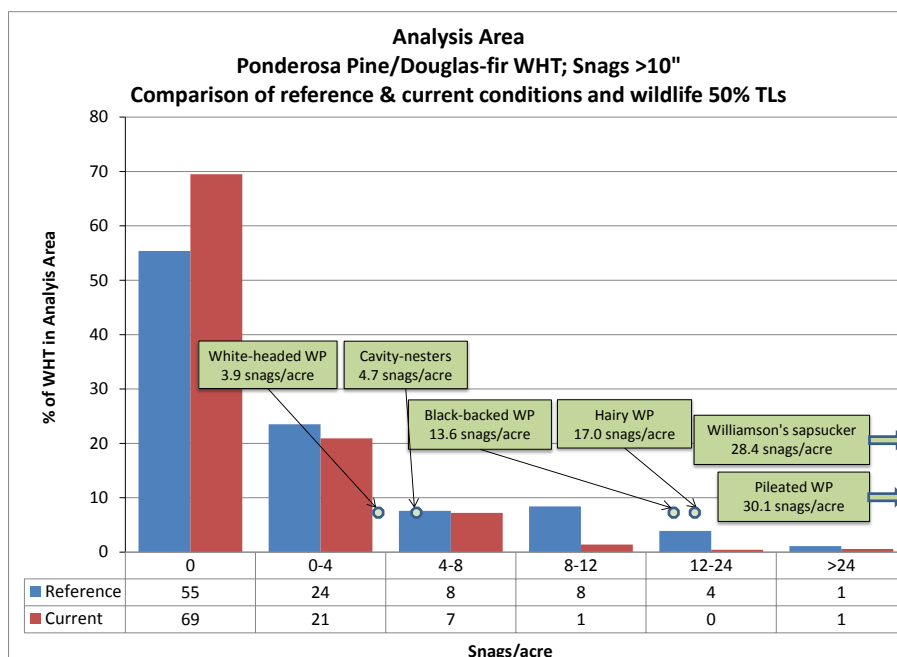


Figure 15 Comparison of snags >10 inches dbh of reference and current conditions within the analysis area.

As shown in Figure 16, snags ≥ 20 inch dbh within the analysis area in all density categories for ponderosa pine are below the reference condition except for the amount of area with no snags. The current condition for the no large snag class is 87% which is above the reference condition of 65%. The most deficiencies are occurring in the mid density categories of 2 to 10 snags per acre (currently 4% as compared to a reference condition of 17%).

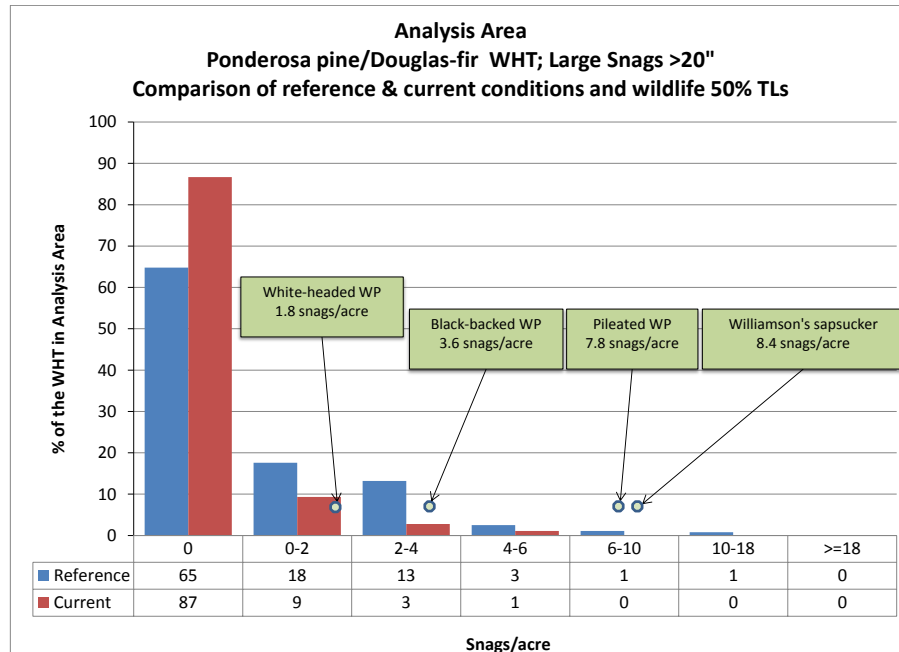


Figure 16 Comparison of snags >20 inches dbh of reference and current conditions within the analysis area.

The following figure (Figure 17) shows the recruitment of snags in the adjacent timber sale areas. As one can see in year 2010 there were few snags >20 inches dbh, but over 5 snags per acre between 15 and 20 inches dbh. Over time the density of snags between 15 and 20 inches dbh falls while there is growing numbers of large diameter snags being recruited.

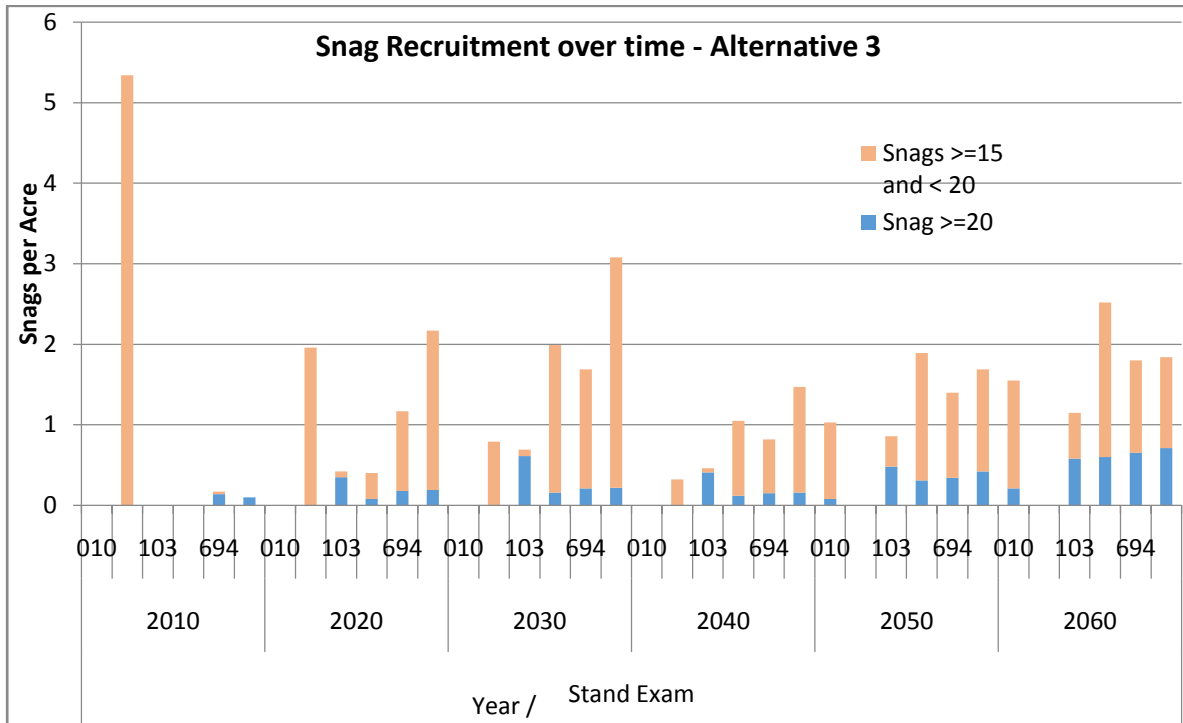


Figure 17 Recruitment of snags in ponderosa pine in the Thor and Odin timber sale area based on FVS runs in representative stands.

Down Wood Existing Condition

Within the analysis area, small downed wood in ponderosa pine is occurring in greater abundance (above 2% cover) as compared to the reference condition. This indicates that most sites have either too much or too little abundance of small downed wood as compared to the reference, with a deficiency in the moderate category (0-2% cover) as shown in Figure 19 below.

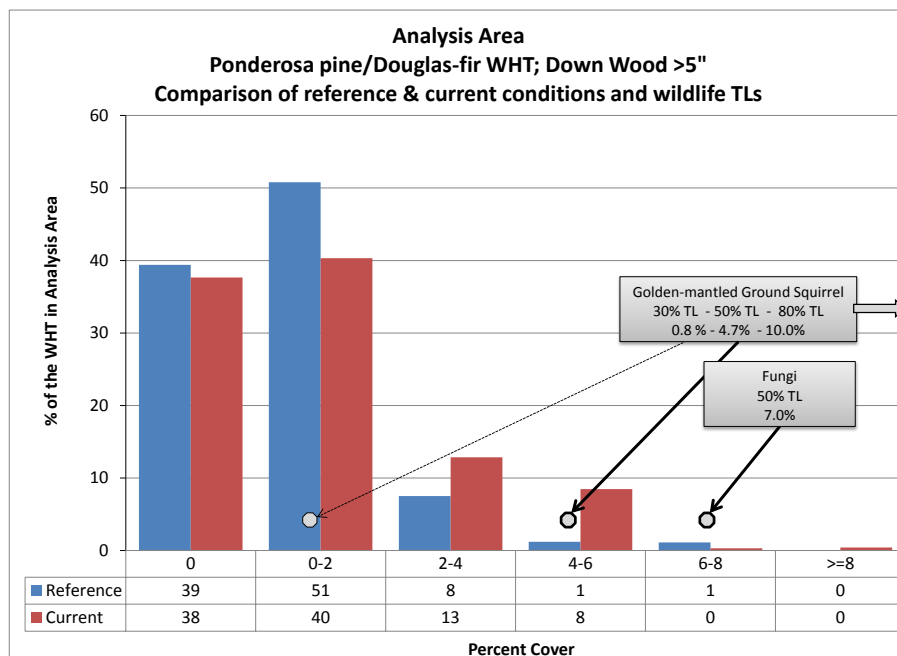


Figure 18 Comparison of down wood >5 inches of reference and current conditions within the analysis area

For large downed wood, reference figures indicate the rarity of large logs in ponderosa pine overall. The current condition is even farther reduced, and exceeds the reference condition and for areas with no large logs at all (81% compared with the 68% reference).

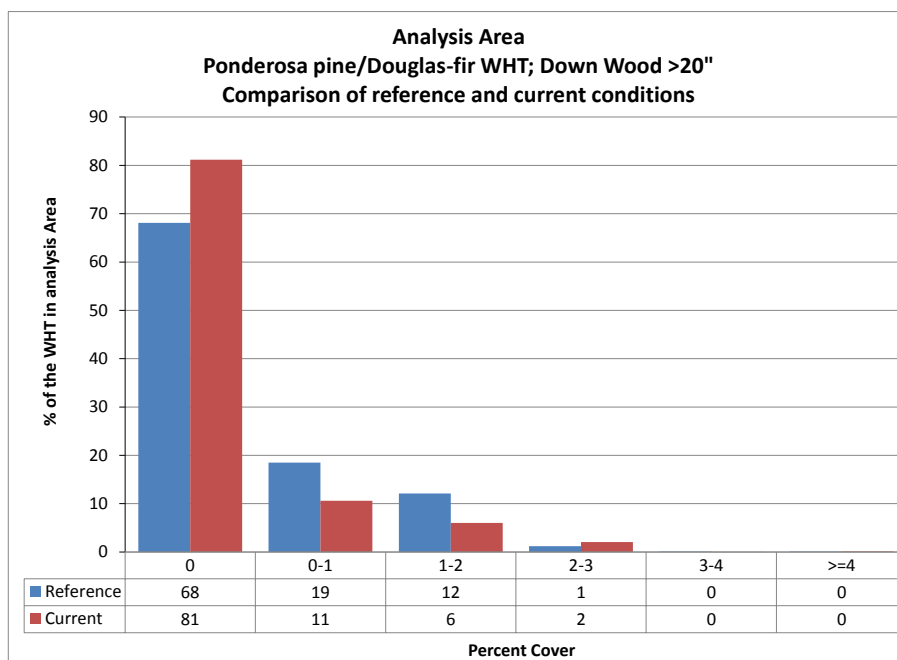


Figure 19 Comparison of down wood >20 inches of reference and current conditions within the analysis area

Ponderosa pine stands in the analysis area are lacking large snags and logs, there is a deficiency of small snags in high densities, and there is an abundance of high density, small down wood.

Snags and Down Woods Effects

Alternative 1 – Direct, Indirect and Cumulative Effects

There are no known direct impacts to snags, down wood, or green tree replacements (GTRs) under Alternative 1 (no action). Currently, there are a limited number of large snags on the landscape. Increased fuel loadings and continuity from fire suppression has increased the risk of large fires. Although these large stand replacement events create snags, due to the project areas juxtaposition with private land and an established utility corridor, suppression would be a high priority and stand replacing event would not occur. There may be a higher likelihood of large snags being created from a fire within the adjacent timber sale units.

Recruitment and maintenance of dead wood would not likely occur within the current utility corridor. Hazard tree maintenance for this BPA powerline would be ongoing – further suppressing the development of large snags and eventually logs.

In the adjacent areas a steady recruitment of new snags and logs are expected, they would generally be a mix of snags larger than 15 inches dbh, (Figure 17). This modeling suggest that under the no action alternative larger snags may still develop in the adjacent timber sale areas.

Green tree replacements would also remain at existing levels across the landscape and all trees outside the hazard tree right-of-way for the BPA line would continue to be available for use as green tree replacements.

Alternative 2 – Direct and Indirect Effects

The proposed action would remove all current snags within the footprint of the proposed right-of-way and in the hazard tree area snags that are defined as a hazard (potential to hit the line) would be felled.

Currently downed logs in the hazard tree zone (Zone 2) would remain because they do not pose a hazard to the powerline. Recruitment of downed wood would slow considerably in the short and long-term as slash from the removal of trees is collected and burned in the ROW. In Zone 2 (hazard tree zone) trees identified as a hazard (trees that could hit the line, Figure 7) would be felled and left on the ground.

In the adjacent areas a steady recruitment of new snags and logs are expected, they would generally be a mix of snags larger than 15 inches dbh. This modeling suggest that larger snags may still develop in the adjacent timber sale areas.

Snag and green tree replacement standard and guidelines are not applicable within Zone 1 of project area because trees would have to be removed to construct and safely maintain the line, this would limit this zone from retaining and developing new snag habitat. These S&Gs apply to projects that are vegetation management projects, this project is a special use authorization and trees within Zone 1 would pose a safety hazard to the line and people (Chapter

1.5 Management Direction). Within Zone 2, hazard trees would be felled and left in place creating down wood habitat. Zone 1 would reduce snag and log habitat and maintenance in Zone 2 could reduce snag habitat but may provide more down wood.

Alternative 2 – Cumulative Effects

As a result of the proposed action there would be a cumulative reduction in snag and log habitat in the analysis area. Snag habitat and green tree replacements would be removed in Zone 1. This contributes to a short term reduction in snag habitat across the ponderosa pine habitat type in the analysis area.

Future recruitment of snags, by way of green tree replacements, would be non-existent within the proposed ROW (Zone 1). Construction of the line and future maintenance would require the felling of trees (could include snags) that are identified as hazards. Recruitment in the analysis area would still occur in the adjacent timber sale areas and those trees/snags within Zone 2 that do not pose a threat to the line.

Cumulatively, the proposed action would have little effect to downed log densities. Some downed logs would be removed during the construction, but this would be limited to the ROW (Zone 1) and not the associated hazard tree zone. Over time, the proposed action contributes to an overall reduction in downed log densities as the powerline ROW is maintained. In the hazard tree zone, trees that could hit the line are felled and left adding to down logs. It would be unlikely that smaller trees would remain due to the line's proximity to private residences and fuel loading concerns (i.e. the smaller trees fallen would be additive to fuel loads adjacent to private land).

Overall, the proposed action would influence a small portion of the analysis area (3%) and an even smaller portion of Forest-wide ponderosa pine habitat (<1%) resulting in a small negative impact locally with limited effect across the analysis area and Forest-wide. In addition, because the project area lies adjacent to private property and an active powerline (BPA), these areas are not likely to be

managed to provide high densities of either snags or downed wood. Eastside Screens direction for snags and logs would be applicable in Zone 1 (Eastside Screens Appendix B: all sale activities will maintain snags and green tree replacements...at 100% population potential levels of primary cavity excavators (e.g. woodpeckers)). Project design criteria (Chapter 2 of this EA) such as down wood retention and the potential to top hazard trees, if safely allows, would mitigate this. Also not all snags within Zone 2 or the hazard tree zone would be felled, only those that could hit the line are the ones considered a hazard in Midstate terms.

Northern Goshawk Existing Condition

Surveys for nesting goshawk were conducted in 2016. No goshawks were detected.

Only a small amount of suitable goshawk habitat(0.002%) exists as small parcels within the project area. It is more likely that these small parcels of habitat may be or could be part of a larger single territory. Habitat on the adjacent National Forest land has become more defined as a result of logging that has thinned some stands and retained others to provide goshawk habitat or protect known habitat.

Northern Goshawk Effects

Alternative 1 – Direct, Indirect, and Cumulative Effects

As a result of this alternative, current levels of goshawk habitat would remain. There would be no direct, indirect and cumulative effect on northern goshawk.

Alternative 2 – Direct and Indirect Effects

Less than >1% (0.002%) of habitat within the project area would be removed. This is unlikely to directly affect goshawks the existing habitat is scattered along the length of the project area and do not make up one larger patch within a single territory.

Indirectly, the loss of these habitat (>1% within project area) would have an impact if they are part of a larger goshawk territory. The indirect impact would be reduction of available prey or nesting habitat. Although this loss of habitat is permanent, that is the trees would not grow back due to continued maintenance along the ROW, the severity of this loss of habitat is low because: 1) surveys did not detect any goshawk use in the project area or within 0.25 mile, and 2) the lost habitat represents small parcels; not one continuous patch.

Alternative 2 – Cumulative Effects

Cumulative impacts are the reductions in suitable habitat availability due the powerline corridor construction and thinning in the analysis area. Habitat would continue to be present in the retained stands of the adjacent timber sale areas. In the long-term, goshawk nesting habitat would return in forested stands further away from the powerline corridor in the adjacent thinned stands.

Alternative 2 – Impact Statement

Implementation of the proposed action would result in a small negative impact to goshawk populations with continued viability expected on the Deschutes National Forest. These impacts would only occur on a small portion of habitat (<1% Forest-wide). The loss of habitat would be minor at the scale of the Forest. The project is consistent with the Forest Plan with the Eastside Screens Amendments, and thus continued viability of northern goshawk is expected on the Deschutes National Forest.

Cooper's Hawk Existing Condition

Cooper's hawk occurrence has been documented adjacent to the project area. Within the project area, there is only marginal habitat (0.003% of habitat in project area) for Cooper's hawk. The habitat within the project area is in scattered small parcels that may or may not be part of a larger patch of habitat outside the project area. Existing habitat is likely suitable for both foraging and nesting, no nests have been documented within or directly adjacent to treatment units (Bend-Fort Rock District Files). Only if the parcels were part of a larger block would they be considered suitable nesting habitat.

Cooper's Hawk Effects

Alternative 1 – Direct and Indirect Effects

No action would maintain the current condition and adjacent activities. The existing BPA powerline corridor would continue to be maintained in an open condition and not suitable habitat for Cooper's hawks.

Project actions under the Thor, Odin, and Dice timber sale areas would continue. Within these sale areas, most of the mature logging portions have been completed and some fuels treatments (piling, mowing, and burning) have still yet to be done. The existing condition has accounted for these sale units, and the remaining habitat is within retained clumps or non-treated stands within the sale areas. Within these areas, Cooper's hawk habitat would remain until the next entry or if a wildfire burned through the area.

Because Cooper's hawks use dense stands for nesting and hunting, it is unlikely that within either the corridor or the Crossings project adjacent to private land, habitat would ever develop. These areas are maintained in a more open condition due to proximity to utility lines and private property.

Alternative 2 – Direct and Indirect Effects

The proposed action would remove >1% of current Cooper's hawk habitat. Forested habitat within the proposed right-of-way and hazard tree zone that is not currently habitat would not become habitat. The creation and maintenance of the ROW would preclude the development of Cooper's hawk habitat. The indirect loss of habitat limits the amount of available habitat that an individual Cooper's hawk may expand into either through dispersal or movement from another territory. This can contribute to limits in the size of the local population.

Alternative 2 – Cumulative Effects

The proposed action cumulatively reduces Cooper's hawk habitat in the short-term with the adjacent timber sale areas. Within the sale areas, Cooper's hawk habitat is retained within the no treat areas, and would be allowed to develop in the treated areas.

Adjacent to the private land (Crossings sale area) and BPA corridor, the proposed action would cumulatively add to the amount of area where Cooper's hawk habitat would not be allowed to develop in the long-term. The close-canopied forests that this species nests within, are not conducive to the low fuel loading, lack of hazard trees these projects (crossings, utility/powerline maintenance) manage for in the long-term.

Alternative 2 – Impact Statement

The proposed action would have a small negative impact on the continued viability of Cooper's hawk on the Deschutes National Forest. This would occur over a very small portion of suitable habitat forest wide (<1%). Because this project impacts less than 1% of suitable habitat across the Deschutes National Forest, the loss of habitat would be minimal at the scale of the Forest. The project is

consistent with the Forest Plan and the Eastside Screens Amendments, and thus continued viability of Cooper's hawk is expected on the Deschutes National Forest.

Sharp-shinned Hawk Existing Condition

Sharp-shinned hawk occurrence has been documented within the analysis area. Existing habitat is likely suitable for both foraging and nesting, although no nests have been documented within or directly adjacent to proposed right-of-way (Bend-Fort Rock District files).

Sharp-shinned Hawk Effects

Alternative 1 – Direct and Indirect Effects

Current habitat adjacent to the actual corridor would remain under this alternative. The BPA corridor would be maintained with hazard trees removed. This type of on-going maintenance may have small impacts to patches of sharp-shinned habitat along the corridor.

Project actions under the Thor, Odin, and Dice timber sale areas would continue. Within these sale areas, most of the mature logging portions have been completed and some fuels treatments (piling, mowing, and burning) have still yet to be done. The existing condition has accounted for these sale units, and the remaining habitat is within retained clumps or non-treated stands within the sale areas. Within these areas, sharp-shinned hawk habitat would remain until the next entry or if a wildfire burned through the area.

Because sharp-shinned hawks use dense stands for nesting and hunting, it is unlikely that within either the corridor or the Crossings project adjacent to private land, habitat would ever develop. These areas are maintained in a more open condition due to proximity to utility lines and private property.

Alternative 2 – Direct and Indirect Effects

The proposed action would remove current habitat within the right-of-way (hazard tree area). Habitat would not develop in the ROW as it is maintained in the open condition and all hazard trees removed.

Indirectly the proposed action would restrict sharp-shinned hawk habitat to outside the ROW. This would be a loss 0.003% of the project's area potentially forested habitat, limiting the amount of available habitat that an individual sharp-shinned hawk may expand into either through dispersal or movement from another territory. This can contribute to limits in the size of the local population.

Alternative 2 – Cumulative Effects

The proposed action cumulatively reduces sharp-shinned hawk habitat with the adjacent timber sale areas. However, within the sale areas, sharp-shinned hawk habitat is retained within the no treat areas, and would be allowed to develop in the treated areas.

Adjacent to the private land (Crossings sale area) and BPA corridor, the proposed action would cumulatively add to the amount of area where sharp-shinned hawk habitat would not be allowed to develop in the long term. The close-canopied forests that this species nests within, are not conducive to the low fuel loading, lack of hazard trees these projects manage for in the longterm.

Alternative 2 – Impact Statement

The proposed action would have a small negative impact on the continued viability of sharp-shinned hawk on the Deschutes National Forest. This would occur over a very small portion of suitable habitat forest wide (<0.1%). The loss of habitat would be minimal at the scale of the Forest. The project is consistent with the Forest Plan and the Eastside Screens Amendments, and thus continued viability of the sharp-shinned hawk is expected on the Deschutes National Forest.

Woodpecker Guild Existing Condition**Williamson's Sapsucker**

Two Williamson's sapsucker nests were located during field surveys in stands adjacent to the hazard tree zone. They were in ponderosa pine (one in a snag, and the other in the dead portion of a live pine).

Hairy Woodpecker

Hairy woodpeckers were observed in stands adjacent to the project area but no nesting was observed.

Northern Flicker

Although potential nest snags are present for the species, current densities are at the lower end of the ranges used by these species. However, use of the area by these species has been demonstrated with field surveys.

Woodpecker Guild Effects**Alternative 1 – Direct and Indirect Effects**

The no action alternative would have no direct impacts to these three woodpecker species. Current habitat would exist at least in the shortterm. Long term, there may be some reduction in available nesting habitat (i.e. snags) as the current BPA line is maintained and hazard trees addressed.

As illustrated in the snag portion of the analysis, the area is already lower than reference conditions in snag densities and sizes that provide the highest levels of assurance of providing habitat for these species (i.e. the 50%+ tolerance level). This is indicative of relatively low quality habitat being provided, and this alternative would not change this condition.

In the longterm, better habitat for these species would develop in the areas to the east of the powerline, where thinning would promote tree growth and prescribed burning may create some snags.

Alternative 2 – Direct and Indirect Effects

The proposed action would remove nesting habitat for each of these species both in the short term and long term. Current habitat would be removed during the construction of the line and continued maintenance of Zone 1, precluding snag habitat from developing.

The current low quality habitat in terms of snag density and snag sizes would become more confined to areas east of the ROW. This would be especially true for the hairy woodpecker and Williamson's sapsucker, two species that use more forested habitat for nesting and select for areas with higher snags densities. For the northern flicker, a species that can use more open forested conditions, it is possible that the poles for the new line could become habitat as they age, although this is not to be considered "creating habitat" (i.e. erecting poles for a powerline). Any future use of the poles by flickers would be opportunistic.

Alternative 2 – Cumulative Effects

There is a cumulative reduction in nesting habitat for the short and longterm as a result of the Crossings sale area and the proposed powerline construction. Although the Crossings project is part of the existing condition for snags and these species' habitats, cumulatively with this project there is added area whereby nesting habitat would be strongly discouraged from developing. The proposed project adds an additional 46.1 acres of forest land that would not become future nesting habitat, and in the hazard tree zone, habitat would be limited to those snags or trees with decay that would not hit the powerline (e.g. shorter stobs).

Nesting habitat would be allowed to develop east of the proposed action where thinning would promote tree growth and prescribed burning may create snags.. Until nesting habitat develops in these areas, there would be a cumulative reduction in available nesting habitat for these species.

Alternative 2 – Impact Statement

The proposed action would have a small negative impact on the continued viability of Williamson's sapsuckers, hairy woodpeckers, and northern flickers on the Deschutes National Forest. The reduction in nesting habitat would occur over a very small portion of suitable habitat forest wide (<0.1%) for each of these species.

Because this project impacts less than one tenth of 1% of suitable habitat across the Deschutes National Forest, the overall effects would result in a small negative trend of habitat and would be minimal at the scale of the Forest. However continued viability of the Williamson's sapsucker, hairy woodpecker, and northern flicker is expected on the Deschutes National Forest because the amount of area affected is minimal and there are mitigations to maintain some larger snag habitat.

For the known Williamson sapsucker nests near the project area, and the observation that there were still nestlings in the cavity on June 21st, a seasonal restriction on the cutting of trees from May 1st – July 20th to allow for laying, incubation, and fledging.

The proposed project is consistent with management direction when it comes to Utility Corridors and General Forest (see page 9). However, snag standard and guidelines are not applicable within Zone 1 of the project area, this would limit this zone from retaining and developing new snag habitat. Project design criteria (Chapter 2 of this EA) would help mitigate this. Trees in Zone 2, when safely can be done, would be topped to retain snag habitat. Also not all snags within Zone 2 of the hazard tree zone would be felled, only those that could hit the line are considered a hazard. This is a special use project where it is unsafe to maintain trees in Zone 1, these S&Gs are intended for projects that manage vegetation.

Red-tailed Hawk Existing Condition

Within the analysis area, red-tailed hawk habitat is likely suitable for both breeding and foraging. The nesting habitat would be in the adjacent forested stands, and within the powerline there are perches and open foraging habitat beneath the lines and/or open private land (also foraging habitat) is not far away. Red-tailed hawks have been documented in the area although no known nest sites occur within or directly adjacent to proposed powerline (Bend-Fort Rock District files).

Red-tailed Hawks Effects

Alternative 1 – Direct and Indirect Effects

The area would likely continue to support red-tailed hawk for nesting and foraging with no disturbance beyond the existing baseline. Current nesting structure would continue to be provided, and development of larger trees would occur in the timber sale areas adjacent to the corridor.

Alternative 2 – Direct and Indirect Effects

The proposed construction of the powerline and associated hazard tree removal would create more foraging habitat and reduce nest tree structure in Zone 1. Red-tailed hawks have been known to use artificial/man-made structures for nesting although use of a power pole is rare. As mitigation the erected poles would conform to APLIC guidelines to reduce the risk to birds of prey (see <http://www.aplic.org/Electrocutions.php>)

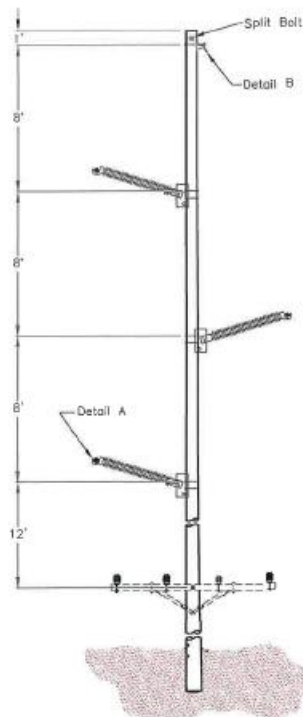


Figure 20 Pole design to be used in this proposed project.

Alternative 2 – Cumulative Effects

Cumulatively the proposed action reduces nesting structure and adds to noise disturbance in the area. The reduction in nesting structure is more drastic under the proposed action, than in the adjacent timber sales, because of the removal of all mature trees in Zone 1. Conversely the adjacent sale areas and Zone 2 retain some nesting structure. Because some of the adjacent sales are ongoing, the proposed action would add to the noise disturbance in the area; however there are no nests in the area to warrant a seasonal restriction. Should a nest be located within ¼ mile of the new powerline location a seasonal restriction of activities from March 1st - Aug 31st would be imposed.

Alternative 2 – Impact Statement

The proposed action is expected to have no impact to the viability of red-tailed hawk on the Deschutes National Forest. Both nesting and foraging habitat would remain available, and mitigations for powerline construction (poles) as well as restrictions for any newly discovered nests would negate any negative effects. This species is considered secure in Oregon.

American Marten Existing Condition

Habitat mapping for the marten focused on mixed conifer and lodgepole pine habitats. Generally ponderosa pine forests are not considered marten habitat. Although the proposed action area is ponderosa pine, there are some lodgepole pine stands near the project area. Within the analysis area habitat for upwards of three pair territories based on estimates in USDA FS 2012 adjacent to project area. District records show one observation of a marten in the Odin Sale area adjacent to the project area.

Because of this species preference for large downed wood and the general lack of large downed wood in the analysis area; the quality of the habitat in the area currently for marten is low.

American Marten Effects

Alternative 1 – Direct and Indirect Effects

Not only would existing habitat conditions for marten not change under this alternative, but also current management practices. The existing BPA corridor would be maintained to reduce hazards which limits the recruitment of new downed wood to the area, and the road that accesses the powerline would be maintained clear of downed wood. In the adjacent areas, recruitment of downed wood would more likely take place to the east; away from the private lands where low fuel loading is a high priority.

Large logs favored by marten are rare and in low densities throughout the analysis area. Marten use would be restricted to the higher densities of smaller diameter pieces. Adjacent to the powerline, these are mostly found in old slash piles.

Alternative 2 – Direct and Indirect Effects

The proposed action would remove canopy cover in Zone 1 which is an important part of marten habitat (0.03% of habitat within the project area). The impact of this removal may be minimal because the powerline is within ponderosa pine stands which are not commonly marten habitat.

The proposed action would have longterm effects by reducing the recruitment of downed logs from fallen trees and snags in Zone 1. Zone 2 would maintain down wood and snags that do not pose a hazard to the line or could be safely topped. These effects combined reduce the availability and suitability of marten habitat within the footprint of the proposed powerline. The currently poor habitat in Zone 1 would become no habitat.

Alternative 2 – Cumulative Effects

The proposed action is cumulative to the other adjacent actions in the analysis area – specifically to the east where the stand types are more typical of marten habitat.

In the adjacent project areas, fuel loadings have or would be reduced which means that high downed log densities used by marten for hunting and denning would also be reduced. Marten can use piled wood, but these piles created from the slash of the logging are often burned up. Project design criteria (Chapter 2) would retain logs and/or slash piles to mitigate the loss of downed logs. The removal of trees and most slash in Zone 1 combine with the habitat removed as part of the Thor, Odin, and Dice timber sales further restrict marten use of higher quality habitat to the higher elevations and more montane habitat types.

Alternative 2 – Impact Statement

The proposed action would have a small negative impact on the continued viability of marten on the Deschutes National Forest. This would occur over a very small portion of suitable habitat forest-wide (<0.1%). Marten are considered vulnerable in Oregon. The impact can be mitigated through the retention at least one slash pile per acre within Zone 2. The proposed project is consistent with management direction applicable to marten.

Big Game – Elk and Mule Deer Existing Condition

There is no winter range or Key Elk Areas within or adjacent to the project area. The project area is part of transition range for both elk and deer. Both species use the area as they move from winter range on the private and BLM lands to summer range on the Deschutes National Forest, and vice versa. Occasionally both species would utilize the area throughout the summer, mule deer more than elk. Hiding cover and road densities are the two habitat components measured to determine effects to

the habitat for deer and elk. During field surveys in the summer of 2016, mule deer does with fawns were observed on two different occasions.

Table 9 Summary of suitable habitat acres and percentage for deer and elk (updated 2015 forest data).

Standard & Guideline	Acres of habitat in Proposed Action Area	Acres of habitat in the analysis area	Acres of habitat on the Deschutes National Forest
30% of hiding cover retained or provided over implementation unit*	23 (8% of proposed action area)	8734 (25% of analysis area)	689,580

*Implementation unit is defined for project area as the larger cumulative effects analysis area.

Table 10 Summary of suitable habitat for deer and elk (road density).

Standard & Guideline	Miles per square mile in Proposed Action Area	Miles per square mile in the analysis area
≤2.5 mi./sq. mi averaged over the implementation unit*	7.9 (most of this is the BPA access road)	3.7

Big Game – Elk and Mule Deer Effects

Alternative 1 – Direct and Indirect Effects

The no action alternative would maintain the existing condition for deer and elk, including the open road density. Hiding cover in the analysis area is already below the standard and guideline level largely due to the amount of private land and urban interface in the included watersheds.

Alternative 2 – Direct and Indirect Effects

The proposed action would remove any existing hiding cover in Zone 1. Although this is a small indirect effect to deer and elk in the shortterm, the longer term effect would be that hiding cover would not be allowed to develop within Zone 1 as part of ongoing maintenance.

The proposed action provides an opportunity to close and decommission additional roads in order to move the area closer to standard and guideline levels and reduce the impact of the lack of hiding cover (Table 3). Closing roads can off-set the lack of hiding cover by limiting access (i.e. human disturbance) to public land from the adjacent private land.

Alternative 2 – Cumulative Effects

By expanding the width of the existing corridor the proposed action would add to the amount of area already with little hiding cover to the west of the powerline corridor. With the proximity to private land and residential developments, poaching may become an issue in the area.

The deer and elk use-pattern shift analyzed for the Thor and Odin timber sales (Ogden EIS) could become more pronounced with a further reduction in hiding cover in the area. Added road closures associated with the proposed action would help off-set some of the impacts from the loss of hiding cover.

Alternative 2 – Impact Statement

The proposed action would have a small negative impact on the continued viability of big game on the Deschutes National Forest. This would occur over a very small portion of suitable habitat forest-wide (<0.1%). Both species are considered secure in Oregon.

The proposed project does help provide consistency with management direction applicable to big game in the larger analysis area (WL52-58; WL60). The project would remove hiding cover, to mitigate the removal of hiding cover road closures and decommissioning has been included in Alternative 2 (Chapter 2).

Landbirds

The landbirds considered in this section include those applicable species identified by the U.S. Fish and Wildlife Service in their Birds of Conservation Concern Report (USDI FWS 2008) and focal species identified in Partners in Flight Conservation Plans by applicable geographic region (Altman 2000). This analysis fulfills the requirements of the Migratory Bird Treaty Act (1918), Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds, Federal Register 2001) and the Forest Service & Fish and Wildlife Service Memorandum of Understanding (2008) to “strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration.”

Landbird species considered but not carried forward for analysis include: bald eagle, black rosy finch, red-naped sapsucker, red-breasted sapsucker, black-backed woodpecker, three-toed woodpecker, black swift, black-chinned sparrow, black-chinned sparrow, bobolink, Brewer’s sparrow, brown creeper, Bullock’s oriole, burrowing owl, calliope hummingbird, Clark’s nutcracker, dusky grouse, ferruginous hawk, golden eagle, gray flycatcher, grasshopper sparrow, greater sage grouse, green-tailed towhee, lazuli bunting, lark sparrow, loggerhead shrike, long-billed curlew, marbled godwit, peregrine falcon, prairie falcon, pinyon jay, sage sparrow, sage thrasher, sandhill crane, sharp-tailed grouse, snowy plover, tricolored blackbird, Virginia’s warbler, willow flycatcher, yellow rail, yellow warbler, yellow-billed cuckoo, yellow-billed loon, and yellow-breasted chat. These species either do not occur or do not have habitat within or near the project area resulting in no anticipated impacts from the proposed project.

BCC – birds of conservation concern; CEFS – Cascades East Slope Focal Species

Chipping Sparrow

Status	Basic Habitat Description	Consistent with CEFS Conservation Strategy (Y/N/NA)	Habitat Increased, Decreased, or Unchanged (+/-/=)
CEFS	Open understory ponderosa pine with regeneration	Y	+

POTENTIAL EFFECTS:

The proposed action would result in open stand conditions favorable to chipping sparrow. If project implementation takes place in spring, currently nesting chipping sparrows may be disturbed.

Pygmy Nuthatch

Status	Basic Habitat Description	Consistent with CEFS Conservation Strategy (Y/N/NA)	Habitat Increased, Decreased, or Unchanged (+/-/=)
CEFS	Mature ponderosa pine	N	-

POTENTIAL EFFECTS:

The proposed action would result in reduction of habitat available for this species. Current snags would be removed and future recruitment of snags would be discouraged.

Williamson's Sapsucker

Status	Basic Habitat Description	Consistent with CEFS Conservation Strategy (Y/N/NA)	Habitat Increased, Decreased, or Unchanged (+/-/=)
CEFS, BCC	Mature/old growth conifer forest with open canopy	NA	-

POTENTIAL EFFECTS:

Williamson's sapsucker is known to occur within the project area, although the CEFS priority habitat for this species is mixed conifer, which would not be impacted by the proposed action. Therefore the conservation strategy is not applicable. The proposed action may result in a short-term, localized disturbance to individual birds using the area during project implementation, and would discourage the future development of large tree and snag structure immediately within the project area.

3.4.2 BOTANY

The biological evaluation to document project effects on Threatened, Endangered, and Sensitive (TES) plant species is prepared in compliance with the Forest Service Manual (FSM) 2672.4 and the Endangered Species Act of 1973 (Subpart B; 402.12, section 7 consultation). Effects of this activity are evaluated for those TES plant species on the current Regional Forester's Sensitive Species List (FSM 2670.44, July 2015) that are documented or suspected to occur on the Deschutes National Forest.

Introduction

Surveys for TES species have been conducted within the project area on in the vicinity in similar habitats. No TES species have been located during surveys. There is no likely habitat for any of the species on the Regional Forester's sensitive list, nor are there any known sites present within the project area. Specifically, there is no habitat present for the bryophytes (liverworts and mosses) on the TES list; bryophytes are associated with moist soils and habitats and the project area does not provide that. There is no habitat present for the two lichens on the list; one requires drier habitat and the other requires wetter habitat than what the project area offers. There is no habitat present for the five fungi on the list; they all require plant associations that occur at higher elevations, within higher precipitation regimes. Finally, there is likewise no habitat present for the vascular plants present on the R6 sensitive species list.

No habitat or known sites are present for Federally Threatened, Endangered, Proposed, or Candidate plant species within the project area.

Alternative 1 – Direct, Indirect and Cumulative Effects

There would be no direct or indirect effects to botanical resources since proposed activities would not occur and there are no TES, Candidate or Region 6 sensitive plant species or habitat within the project area. Since no direct or indirect effects would occur there is no overlap in time and space with activities and effects therefore there would be no cumulative effects.

Alternative 2 – Direct, Indirect and Cumulative Effects

No known TES, Candidate, or Region 6 sensitive plant species nor habitat exist within the project area therefore there would be no direct, indirect, or cumulative effects from the action alternatives. Since there are no direct or indirect effects to overlap in time and space with past, present, and reasonably foreseeable future projects there would be no cumulative effects.

3.4.3 INVASIVE PLANTS

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, Forest Service policy requires that decision documents must identify noxious weed control measures that would be undertaken during project implementation (FSM 2081.03).

Existing Condition

A specific weed reconnaissance for this project was not conducted. To date there are no recorded weed sites within the project area although it has not received a comprehensive survey.

Risk Ranking

A risk ranking of high is warranted for the proposed action, because of the possibility of weeds being imported via heavy equipment and the presence of a maintenance road running the length of the project. Although there are no documented sites within the project (a small knapweed site adjacent has been extirpated), it is likely there are weed sites that have not been found. Therefore, a high risk is appropriate for this project. Inspecting the equipment associated with the project and surveying for and treating weed sites would lessen although not remove the risk of weed introductions into the project.

Alternative 1 – Direct, Indirect and Cumulative Effects

There are no identified effects associated with this alternative. Because a road runs through the length of the project, there would be continued opportunities for weed sites to establish via the vehicles using it.

Alternative 2 – Direct, Indirect and Cumulative Effects***Direct and Indirect Effects***

The highest concern coming from the proposed action is the possibility of weed introductions from heavy machinery. Project design criteria such as cleaning equipment prior to entry on National Forest lands and to survey for and treat weed sites would help lower the possibility of weeds being introduced and spread, although it would not eliminate those threats.

Cumulative Effects

The scale of analysis is the power line corridor, this scale was chosen because it offers reasonable size in which to determine effects for invasive plants.

Vegetation and fuel management projects (Odgen, Flat, Lavacast, Crossings Fuelbreak) along with existing recreation use and proposed project activities have the potential to introduce weeds. Identified resource protection measures would help with the accidental introduction of invasive species and help control weed sites if some are already established.

Past, present, and foreseeable future actions include not only the disturbance aspects of this project, which increase the susceptibility to weed invasion, but also includes roadside disturbances caused by

vehicles travelling the powerline access road (powerline maintenance vehicles and the general public) and certain areas that receive higher use by campers.

In summary, there have been and would continue to be disturbances and vectors that continue to create an environment that encourages weeds to enter the project area. Continued monitoring and treatment of weed sites would be essential.

3.4.4 SOILS

This section summarizes the potential effects to short- and long-term soil productivity resulting from the proposed and connected actions within the project area. Actions addressed in this section include those associated with proposed clearcuts, slash treatment, hazard tree mitigation, pole and line installation, erosion control, and system road usage. All of these activities are examined because they are potentially ground-disturbing management activities that may affect soil properties and capability. The effects analysis section assumes that the project design criteria, mitigations, best management practices, and operating restrictions specified in Chapter 2 of this Environmental Analysis are fully implemented. These measures are designed to avoid, minimize or mitigate potential impacts and to ensure that the project would comply with all pertinent laws, regulations, and policies.

Existing Condition

Ground-disturbing management activities (i.e., timber harvest, road-building, recreational use, livestock grazing, and ROW management) have caused some adverse changes to soil quality in previously managed areas, especially where mechanical disturbances removed vegetative cover, displaced organic surface layers, or detrimentally compacted the soil. While the following measures are used to frame the discussion around existing condition of the soil and impacts expected from the proposed action, specific determinations of soil condition were not made due to the nature of the proposed action. Right-of-way development for the proposed line involves complete clearing of trees within Zone 1 of the corridor to accommodate utility services. This results in a semi-permanent conversion to non-forest administrative land use, which, per Regional guidance, is not subject to the same soil quality standards. While the land within the cleared right-of-way does not have to meet Forest and Regional standards for detrimental soil condition (DSC), there still must be a concerted management effort that limits off-site transference of unwanted soil impacts (e.g., runoff resulting from compacted and denuded surfaces within ROW that erodes adjacent forested soils). Reasonable management actions should be taken to ensure that soil quality and integrity is maintained to the extent practicable within the ROW. Best Management Practices and project-specific Project Design Features are intended to protect adjacent soil resources and maintain a basic level of functioning within the impacted right-of-way.

Table 11 Resource indicators and measures for the existing soil condition

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Existing Condition
Detrimental soil disturbance	The extent of detrimental soil conditions within individual activity areas proposed for mechanical treatments	Percentage of each treatment area in a detrimental soil condition; number of units/acres exceeding 20% DSC	Soil types in the project corridor have been impacted by road construction, timber harvest, construction of the BPA transmission line and associated maintenance and dispersed recreational usage for many decades. A substantial portion of the area is believed to be in a detrimental soil condition. Site-

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Existing Condition
			specific estimates of existing soil condition were not made for this project.
Coarse woody debris and surface organic matter	The amount of coarse woody debris (CWD) and surface organic matter retained to provide ground cover, maintain soil climate, serve as microbial habitat, and a supply a long-term source of nutrients.	Professional judgment/qualitative assessment of sufficiency; percent effective groundcover or tons per acre retained	Monitoring data and best professional judgment suggest that currently forested areas meet LRMP S&Gs for ground cover. Areas currently within existing rights-of-way and in road corridors do not meet S&Gs for ground cover. Site-specific estimates of existing surface cover were not made for this project.

Resource Indicator or Measure 1: Detrimental Soil Disturbance

Management-Related Disturbances

The forests along the proposed corridor have been intensively managed for the last century, it is expected that detrimental soil conditions (mostly in the form of heavy compaction and topsoil displacement) are prevalent. There are also areas along the existing BPA ROW where gully erosion is evident within and along the maintenance road prism (where the BPA line crosses FSR 21 is a good example). Erosion of this type and intensity has the potential to affect offsite areas. Though all of the soil types mapped along the corridor have low or moderate surface soil erosion potential, site impacts like removal of surface organics, heavy compaction, and channeling of flow from road surfaces can increase erosion likelihood and severity.

Resource Indicator and Measure 2 – Coarse Woody Debris (CWD) and Surface Organic Matter

The amount and distribution of downed coarse woody debris (CWD) has been affected by past forest management activities and by insect and disease cycles. Lower-elevation ponderosa pine stands historically had very little CWD and litter accumulation, likely because of repeated, low-intensity fires that burned much of the forest floor, consumed down wood, and killed small trees. Lodgepole pine stands experienced longer fire return intervals and likely built up greater amounts of CWD between major fires as a result of cyclical pathogen and insect attacks, though most of it was likely consumed during large fires.

The Deschutes LRMP specifies that the primary goal for managing the soil resource is the maintenance or enhancement of longterm site productivity. The Region 6 Soil Quality Standards (FSM 2500, R-6 supplement 2500-98-1) says that these standards and guidelines “apply to lands where vegetation and water resource management are the principle objectives”. The supplement further states that “These standards and guidelines do not apply to intensively developed sites such as mines, developed recreation sites, administrative sites, or rock quarries”. The area impacted by this project proposal would be dedicated to an open and safe right-of-way for a powerline, and would be maintained for these administrative uses in perpetuity. While detrimental soil impacts won’t necessarily be limited to 20% of the area, efforts should still be made to constrain the extent and severity of soil impacts to that soils may still infiltrate water, function hydrologically, and provide faunal and microbial habitat.

Environmental Consequences Introduction

Direct effects occur at the same time and place as the soil-disturbing actions. Soil displacement and compaction from equipment operations are examples of direct effects. Indirect effects occur sometime after or some distance away from the initial disturbance. Surface erosion resulting from increased runoff on compacted areas is an example of an indirect effect. Cumulative effects include all past, present, and reasonably foreseeable soil-disturbing actions within the activity areas proposed with this project.

Alternative 1 – Direct, Indirect, and Cumulative Effects

Detrimental Soil Disturbance

The activities proposed would not take place under this no action alternative. The extent of detrimental soil conditions would not increase above existing levels because no additional land would be removed from production to construct a powerline right-of-way. Soil quality would not be diminished further, but would remain compromised where roads (system and user-created), trails (system and user-created), and unrehabilitated landings and skidding routes exist. Although disturbed soils would continue to slowly recover naturally from the effects of past management, the current levels of detrimental soil conditions would likely remain unchanged for an extended period of time.

Coarse Woody Debris and Surface Organic Matter

In the absence of an extreme wildfire, effective ground cover (fine surface organic matter and CWD) would persist and gradually increase where it is lacking due to previous disturbance. Needle-fall, seed, and detritus from live trees would contribute to the recruitment and maintenance of litter, duff, and soil organic material. In forested stands, CWD would accumulate through natural mortality and windfall. Trees, brush, forbs, fungi, and non-vascular plants would gradually begin reoccupying bare sites except on surfaces occupied by open roads and some once-used landings. Organic inputs and biological processes that maintain and cycle soil nutrients essential for plant growth would continue to function and develop at current levels.

This proposed activities would not occur, there would be no direct or indirect effects. Since there is no direct or indirect effects there is no overlap in time and space with activities and effects, therefore, there would be no cumulative effects.

Alternative 2 – Direct, Indirect, and Cumulative Effects

Direct and Indirect Effects

The proposed activities include commercial harvest and total clearing of a right-of-way varying from 40 to 130 feet wide (only a short section coming out of the La Pine Substation would be cleared to 130 feet wide; the majority of the corridor would be cleared to 40 feet wide). The majority of the right-of-way would be located adjacent to an existing right-of-way for BPA's transmission line. In addition to timber harvest, clearing may include mechanical treatment of noncommercial trees (mowing or masticating). Once cleared, 80-foot wooden poles would be installed every 320 feet along the 8.8-mile route. A 50-foot-radius temporary work area would be needed around each pole. Hazard tree abatement would include felling of trees that could potentially strike the line, but removal of those trees is not anticipated. Hazard trees that could not be retrieved from within the 40-foot clearing limit would preferentially be felled and left onsite. Because of the concentrated and widespread use of heavy machinery within the right-of-way corridor, the potential for increasing the extent of detrimental soil conditions within the corridor is high. However, because Forest and Regional Soil Quality Standards are not applicable to areas set aside for administrative purposes, the overarching goal for soils management is reasonable protection of soil resources to maintain a base level of function (including erosion minimization and protecting hydrologic function), and to prevent

the conveyance of impacts onto adjacent productive soil areas. Project design features listed and standard contract specifications limit the extent of ground impacts from mechanical harvest to those necessary for removal of material.

Table 12 Resource Indicators and Measures for the Proposed Action

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Areas Common to Action Alternative
Detrimental soil disturbance	The extent of detrimental soil conditions within individual activity areas proposed for mechanical treatments	Percentage of treatment area in a detrimental soil condition; number of units/acres exceeding 20% DSC	The extent of detrimental soil condition within the proposed right-of-way corridor was not directly monitored or estimated for this project. It is anticipated that the levels of DSC would increase substantially as a result of the proposed activities, but that BMPs, PDFs, and standard contract specifications would adequately protect basic soil function and prevent off-site conveyance of negative soil impacts.
Coarse woody debris and surface organic matter	The amount of coarse woody debris (CWD) and surface organic matter retained to provide ground cover, maintain soil climate, serve as microbial habitat, and supply a long-term source of nutrients	Professional judgment/qualitative assessment of sufficiency; percent effective ground cover or tons per acre retained	Monitoring data and best professional judgment suggest that, after all project activities are completed, all of the proposed activity units would meet desired conditions for ground cover. Coarse woody debris would be retained, in Zone 2 per Forest Plan S&Gs. Felling of hazard trees would increase levels of CWD in areas adjacent to the cleared right-of-way.

Detrimental Soil Disturbance

The use of ground-based equipment for vegetation management treatments would increase the amount and distribution of soil disturbance within the proposed ROW. New soil disturbance, primarily in the form of compaction and displacement, could result in adverse changes to soil productivity. Mitigation and resource protection measures would be applied to minimize the overall extent of soil disturbance at random locations between main skid trails and away from log landings. Design features that address other mechanical treatments (small-diameter thinning/mowing/masticating) seek to further limit diffuse soil impacts by limiting where and how machines may travel off of the primary skidding network. In addition, protection measures that require timely road maintenance and basic reclamation of temporary work and staging areas would hasten soil recovery and minimize erosion that could impact productive soil areas outside of the right-of-way corridor. These design features balance land use conversion for construction and maintenance of a needed public utility with sound practices that effectively constrain detrimental soil impacts and maintain soil-hydrologic function.

There would be no new construction of roads that would remain as classified system roads. Temporary roads would not be needed to for project activities. Additional surface cover treatments (seeding, mulching, slash placement, large wood placement) may be needed to minimize erosion potential, increase revegetation success, and discourage vehicular traffic.

Indirect effects related to accelerated erosion after treatment activities have occurred would be expected to be negligible, provided all BMPs and PDFs are fully implemented. Accelerated erosion is not considered to be an issue of primary concern for dominant soil types in the area because surface soils are highly permeable, infiltration rates are rapid, and surface cover is generally adequate to dissipate erosive energy. However, because the proposal may result in extensive bare soil areas during pole installation, timely stabilization or wasting of exposed/excavated soil would be essential. PDFs requiring adequate and timely haul route maintenance, erosion control features on skid trails, and adequate surface organic retention throughout treatment units further lessen the potential for indirect effects to adjacent soil areas from accelerated erosion. Midstate Electric would be responsible for implementing corrective actions for any substantial erosion occurring within their maintained ROW.

Coarse Woody Debris and Surface Organic Matter

The measure for CWD and surface organic matter was evaluated qualitatively based on the probable success of implementing BMPs, PDFs, and recommended guidelines that address adequate retention of these important landscape components to meet soil productivity and erosion mitigation objectives. The proposed right-of-way harvest activities would be expected to retain adequate quantities of fine organics for surface cover, where currently present. These harvest activities would, however, reduce future potential sources of fine organic material and CWD. Harvest activities also recruit some CWD and fine organics to the forest floor through breakage of limbs and tops during felling and skidding operations. If possible, existing CWD and broken branches from implementation would be retained to the extent possible. This might not be practical within the 50 foot radius around the poles but leaves opportunities between poles this would allow for ground cover to remain in place. Some areas, especially temporary work sites established during pole installation, would likely be temporarily denuded but could be expected to recover within five years where decompaction and site preparation facilitates natural revegetation.

Mowing or mastication, if implemented, are not expected to have any meaningful effect on the quantity, size, or continuity of CWD in the corridor. These activities could, however, contribute additional fine organics for surface cover.

Felling of hazard trees would have a beneficial effect on the amount and continuity of coarse woody debris in areas adjacent to the cleared right-of-way.

Cumulative Effects

Spatial and Temporal Context for Effects Analysis

The spatial boundaries for analyzing the cumulative effects to soils are activity areas (cleared right-of-way corridor and adjacent hazard tree treatment area, in this instance), because actions outside the unit boundaries would have little or no effect on soil productivity within the units, and actions within the unit boundaries would have little or no effect on soil productivity elsewhere. An activity area is defined as “the total area of ground impacted by an activity, and is a feasible unit for sampling and evaluating” (FSM 2520 and Forest Plan, page 4.71, Table 4-30, Footnote #1).

The temporal boundaries consider the potential for both short- and long-term effects. Analysis of short-term effects looks at changes to soil properties that would generally recover or revert to pre-existing conditions within five years of completing proposed activities. Long-term effects are those that would substantially remain for five years or longer in the absence of restoration treatments.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The analysis for the soils resource specifically considered the effects of road system development, recreational usage, and historic timber operations.

Table 13 Resource indicators and measures for cumulative effects of soils for Alternative 2

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Area Covered by the Proposed Action	Past, Present, and Future Actions	Cumulative Impacts
Detrimental soil disturbance	The extent of detrimental soil conditions within individual activity areas proposed for mechanical treatments	Percentage of each treatment area in a detrimental soil condition; number of units/acres exceeding 20% DSC	Much of the area currently has high existing detrimental soil impacts due to historic harvest activity and dispersed recreational usage.	The proposed action would increase the extent of detrimental soil conditions. The proposed action converts the primary land management objective within the corridor from forest production to administrative use for a necessary public utility.	The extent and severity of detrimental soil conditions within the corridor would increase as a result of the proposed action, but would begin to recover with time. Basic soil hydrologic function would be maintained and adjacent soil areas would be protected from indirect impacts.
Coarse woody debris and surface organic matter	The amount of coarse woody debris (CWD) and surface organic matter retained to provide ground cover, maintain soil climate, serve as microbial habitat, and supply a long-term source of nutrients	Professional judgment / qualitative assessment of sufficiency; percent effective ground cover or tons per acre retained	Monitoring data and best professional judgment suggest that the majority of the project area currently meets desired conditions for ground cover. Existing coarse woody debris is deficient in much of the project area.	Bare soil areas may result from temporary work areas, but activities are not expected to diminish surface cover in the long-term. Adequate fine organic material would be protected and retained to meet objectives.	Predict sufficient quantities of fine organic matter for surface cover; existing CWD would be protected. CWD in adjacent hazard tree areas would be enhanced.

Detrimental Soil Disturbance

Implementation of the proposed action would cause new soil disturbances where ground-based equipment would be used for mechanical harvest, yarding activities, and pole/line installation. The combined effects of past and current disturbances and those anticipated from implementing the proposed action were previously addressed in the discussion of direct and indirect effects. The majority of project-related soil impacts would be confined to known locations on heavy use areas (roads, log landings, and main skid trails). Most of the area has been subject to previous harvest entries and some level of recreational usage, and is expected to have a meaningful increase in the extent of detrimental soil disturbance. Actual and anticipated levels of DSC were not estimated for this project. Any net change in detrimental soil conditions would be associated with additional logging facilities retained following harvest, temporary work areas for pole installation, and/or scattered areas of compaction/displacement that aren't repaired and persist for the long-term. While

land dedicated to administrative uses is not subject to the same requirements for soil condition that the productive land base is, implementation of this project would still protect basic soil functions, prevent erosion, and avoid conveyance of negative soil impacts to adjacent productive soil areas.

Coarse Woody Debris and Surface Organic Matter

As previously described for the direct and indirect effects, it is expected that the Alternative 2 would comply with the recommended management guidelines that ensure adequate retention of fine organic matter for surface cover, biological activity, and nutrient supplies for maintaining soil productivity on treated sites. PDCs require retention of existing CWD within the cleared right-of-way, where practicable. Felling of hazard trees would continue to enhance existing CWD amounts and continuity in forested stands adjacent to the right-of-way.

3.4.5 FUELS

Existing Condition

Current conditions of the project area is intermixed with forested lands consisting of black bark ponderosa pine and lodge pole pine stands. The understory is a mixture of bunch grasses, antelope bitterbrush, snowbrush, and Greenleaf manzanita. The proposed project area bisect numerous past and current vegetation treatment areas and would expand the existing BPA ROW footprint to include the new MEC ROW.

Alternative 1 – Direct, Indirect and Cumulative Effects

Project activities would not occur under this alternative there would be no direct or indirect effects to fuels. Since no direct or indirect effects would occur there is no overlap in time and space with activities and effects therefore there would be no cumulative effects.

Alternative 2 – Direct, Indirect, Cumulative Effects

Vegetation and Fuels

The project area would effectively remove understory and overstory vegetation in Zone 1 through biomass removal and commercial harvests. Selective hazard tree felling would occur in Zone 2. As needed ROW maintenance of ground fuels and hazard tree felling by permittee would occur for the life of the line. The treated areas in Zone 1 would disrupt or alter fire progression and or enhance suppression opportunities.

Zone 1 - A timber sale would harvest all timber and process slash within Zone 1. Slash not used by purchaser would be piled in pre-designated locations in such a fashion to ensure adequate burning of material and coordinated by the Timber Sales Administrator. All material would be burned by District Fuels Specialists once material is dried and cured. See Chapter 2.3 Project Design Criteria for piling specs. A brush disposal plan would be established to ensure proper funds are allocated for treating slash. Special uses permit (SUP) ROW maintenance would consist of mowing and/or mastication (MST) of brush and trees within Zone 1. SUP ROW maintenance activities would MST brush and trees and keep ingrowth less than 18 inches tall. Hazardous fuels accumulations may not exceed Forest Plan standards.

Zone 2 - Activities would consist of as needed hazard tree felling of imminent hazards likely to strike the transmission line and infrastructure. Zone 2 would not have any active fuels reduction incorporated into the SUP ROW maintenance, however slash generated from selective hazard tree felling within Zone 2, if needed, would be lopped and scattered or hand piled and pile burned. Slash can be defined as un-merchantable material, limbs and bowls that are 0 to 6 inches in diameter generated from felling of trees for hazard tree mitigation. If there is a need to take care of down fuels from hazard tree felling, lop and scatter is the prefer method, piling would only occur if there is an abundance of fuels exceeding Forest Plan coarse woody debris requirements. All piles

constructed would be made with the intent to burn at a later time by District Fuels Specialists, see Chapter 2.3 Project Design Criteria for piling specifications. Hazardous fuels accumulations in ponderosa pine, lodgepole pine, and mixed conifer stands may not exceed Forest Plan standards of 7.6 tons per acre. Fuels that are lopped and scattered should meet size class and description standards of course woody debris (CWD). Course woody debris can be defined as logs longer than 6 feet in length and width of 6 inches diameter or greater on its narrower side. CWD does not include decay class 4 to 5 logs.

Clearing of trees and large brush in Zone 1 (the right-of-way) would create excess fuels in the short term. These fuels would be treated in the project area, as described above.

Zone 1 would be cleared of vegetation and though this zone is not designed as a fuel break, it would modify fire behavior and allow suppression forces an area to effectively engage in a wildfire. The proposed right-of-way (Zone 1) would change the behavior of a wildlife by either dropping it down out of the crowns or limiting the available fuels to burn.

Zone 2 would address the felling of hazard trees that could impact the transmission line. Vegetation and fuel treatments that have occurred or are currently being implemented (Flat and Ogden Vegetation Management projects)

A decrease in fuel continuity from the proposed project combine with past and ongoing projects (Flat and Ogden Vegetation Management, BPA Pole Replacement, and BPA Substation Expansion projects) would continue to reduce fuel densities, which may help to reduce fire behavior within the immediate area. This projects right-of-way (Zone 1) clearing of vegetation when combine with the BPA 100 foot right-of-way serves as a fuel break which would also alter fire behavior.

Air Quality

The Midstate project is adjacent to and near a number of Smoke Sensitive Receptor Areas (SSRA's). These areas include the greater communities of Bend, Redmond, Sisters and Prineville. Smoke has a tendency to settle during nighttime conditions and move down drainages or river corridors (i.e. the Deschutes River). There would be no measurable impacts on air quality from project activities. Pile burning would be conducted in accordance with requirements of state and local agency air quality regulations and Oregon Smoke Management instructions and requires a written burn plan. The burn plan outlines analysis of involved factors that derive a burning prescription to be followed that assures smoke emissions do not exceed limits in accordance with federal Prevention of Significant Deterioration (PSD) regulations.

3.4.6 FORESTED VEGETATION

Prior to 1944 lands found in the ROW were owned the by Shevlin-Hixon Lumber Company. In 1916, the company established a mill in Bend, Oregon and built rail lines south to La Pine, Oregon by 1926. A historic Shevlin-Hixon Logging Railroad map indicates the northern portion of the Midstate ROW was logged between 1928 and 1929.

Through a land exchange, the Deschutes National Forest acquired the lands owned by Shevlin-Hixon in 1944. Early Forest Service records, Historical Atlas Records for the Fort Rock Ranger District Working Circle (1950-1959 and 1960-1969), indicate the currently existing Bonneville ROW was cut in 1951. Maps found in the atlases (Management Inventory Forest Type Maps) indicted that many of the stands found in the ROW were either cut over with in the last five years (prior to 1950) and were non-stocked or had been partially cut over.

Existing Condition

Plant associations found within the proposed Midstate ROW include ponderosa pine/bitterbrush/fescue, ponderosa pine/bitterbrush/needlegrass, and lodgepole pine/bitterbrush. All plant associations have low site productivity.

Walk-through field survey data to determine current stand characteristics was collected in March 2017. On average, species composition for stands was approximately 70% lodgepole pine and 30% ponderosa pine. Stand density index (SDI) values are above recommend stocking levels. Codominant and intermediate trees were healthy and vigorous and have live crown ratios greater than 40%. Crown closure values are 30% or more. Little to no understory trees are present. Codominant trees vary in age between 40 and 70 years. Ponderosa pine trees exhibiting mature or late and old structural characteristics based on Van Pelt (2008) were not encountered in the sample population. Large trees exhibiting mature characteristics were mostly observed as isolated individuals and were not directly sampled because their location fell outside of the area of interest. Structurally, stands can be classified as either Stand Initiation or Stem Exclusion Closed Canopy. Stands classified as being stand initiation are found where the existing BPA ROW crosses forest road systems.

Stand Initiation (SSI) is defined as – growing space is reoccupied following a stand replacing disturbance (such as a fire or harvest event) typically by early seral species. SSI stands typically have grass, forbs, seedlings/saplings present. Scatter overstory may be present as in seed tree or open shelterwood.

Stem Exclusion Closed Canopy (SECC) is defined as – occurrence of new tree stems is mostly limited by light availability and stand density. Tighter tree canopy is present. SS3 stands typically have small diameter trees (less than 21 inches dbh) and crown closure greater than 26%. Scattered overstory may be present.

Trees were mostly free of mechanical defects such as forks or dead tops. Isolated occurrences of dwarf mistletoe (*Arceuthobium americanum*) (Goheen and Willhite, 2006) was observed in lodgepole pine. Within the ROW area no snags were observed and the amount of large, down coarse woody material was scarce. Bitterbrush was the only understory shrub observed across stands. The percentage of ground coverage for bitterbrush was highly variable and ranged between 10 and 50%. Brush height was between one to two feet. Stand conditions are summarized in the Table 14 below.

Table 14 Summary of stand characteristics within the proposed Midstate ROW

Stand Characteristic	Range	Average	Trees >= 9" DBH	Tree < 9" DBH
Trees per acre	50 - 600	233	87	145
Diameter Breast Height (in.)	4 - 19	11.9	14.9	6.3
Tree height (ft.)	20 - 75	47	58	33
Basal Area (ft ² /ac.)	60 - 150	130	104	26
Stand Density Index (value/ac.)	55 - 280	144	165	69

Historic Range of Variability Analysis

The historic range of variability (HRV) analysis is a way to compare what are thought to be ecologically stable conditions to current existing conditions. HRV provides insight how conditions have changed through time. The proposed special use project is not managing or promoting trees within the ROW towards late and old structure conditions but to keep the ROW clear of vegetation to allow for construction, maintenance, safety of the line, and reliability of power to customers. The Midstate HRV analysis tiers to the Ogden Vegetation Management Final Environmental Impact Statement (EIS) and the Flat Vegetation Management project, which tiers to the Long Prairie

Mistletoe project. The project specific analysis only addresses FS lands within the MEC ROW. The ROW would fall into the ponderosa pine biophysical environment.

Presently, stands found in the MEC ROW project have been classified into different forest stand structural conditions where approximately five percent (4 acres) of stands are found in a stand initiation (SI) structures and 95 percent (87 acres) of the stands are found in a stem exclusion closed canopy (SECC) structures. Review of summarized tree data and field visits did not reveal the presence of stands which could be classified as having late and old structural characteristics based on the number of stems per acre and diameters needed to satisfy old growth conditions (Hopkins, 1992).

The proposed timber sale associated with the MEC ROW would clear and remove timber across approximately 46 acres. The transmission line ROW needs to be clear of vegetation to protect the line and limit the chance of a tree falling on the line and potentially starting a fire.

Historically, the dominant disturbance regime found in ponderosa pine biophysical environments, in the Pacific Northwest east of the Cascade crest, are low intensity surface fires which occur approximately every 16 years where 0 to 20% of mature overstory trees are killed. Other disturbances causing mortality include insects and pathogenic root diseases. Fires tended to be of low intensity, rarely scorching the crowns of older, mature trees (Agee, 1993). For all biophysical environments analyzed under the Ogden analysis, the most common patch size caused by disturbances falls between 10 and 50 acres (USDA, 2012) but can range between 10 to 1,000 acres in size.

Forest stand structural stages are defined and described below in Table 15. Table 16 below describes the historic abundance of various structural stages found across the ponderosa pine biophysical environment and shows the relationship between historic, current and post MEC ROW implementation.

Table 15 Structural stages used for the HRV analysis.

Structural Stage	Definition	Description
Stand Initiation	Growing space is reoccupied following stand replacing disturbance, typically by seral species.	One canopy stratum (may be broken or contiguous), one dominant cohort of seedlings or saplings. Grass, forb, or shrubs may also be present with early seral trees.
Stem Exclusion Open Canopy	Occurrence of new trees stems is excluded (moisture limited). Crowns are open grown. Canopy is discontinuous. This structure can be maintained by frequent underburning or management.	One discontinuous canopy stratum. One cohort of trees. New tree stems excluded by competition. Trees may be poles or of small or medium diameter. Understory shrubs, grasses, or forbs may be present.
Stem Exclusion Closed Canopy	Occurrence of net tree stems is excluded (light or moisture limited). Crowns are closed and abiding.	Canopy layer is closed and continuous. One or more canopy strata may be present. Lower canopy strata, if present, is the same age class of the upper stratum. Trees may be poles or of small or medium diameter. Understory shrubs, grasses, or forbs may be present.
Understory Reinitiating	A second cohort of trees is established under an older, typically seral, overstory. Mortality in the overstory creates growing space for new trees in the understory. Large trees are uncommon.	The overstory canopy is discontinuous. Two or more canopy layers are present. Overstory trees may be poles or of small or medium diameter. Understory trees are seedlings, saplings or poles.

Structural Stage	Definition	Description
Multi Stratum without Large trees	Several cohorts of trees are established. Large overstory trees are uncommon. Pole, small, and medium sized trees dominate.	The overstory canopy is discontinuous. Two or more canopy layers are present. Two or more cohorts of trees are present. Large trees are uncommon in the overstory. Horizontal and vertical stand structures and tree sizes are diverse. The stand may be a mix of seedlings, saplings, poles, or small or medium diameter trees.
Multi Stratum with Large trees Late and Old Structural Stage	Several to many cohorts and strata of trees are present. Large trees are common.	The overstory canopy is broken or discontinuous. Two or more canopy layers are present. Two or more cohorts of trees are present. Medium and large sized trees dominate the overstory. Trees of all sizes may be present. Horizontal and vertical stand structure and tree sizes are diverse.
Single Stratum with Large trees Late and Old Structural Stage	A single stratum of large trees is present. Large trees are common. Young trees are absent or few in the understory. Park-like conditions may exist.	The single dominant canopy stratum consists of medium sized or larger trees. One or more cohorts of trees may be present. An understory may be absent or consist of sparse or clumpy seedlings or saplings. Grasses, forbs, or shrubs may be present in the understory
Diameters for different tree sizes: Seedlings – 0.0” Seedlings 0.1 – 4.9” Poles 5.0 – 8.9” Small 9.0-15.9” Medium 16.0-20.9” Large + 21.0”		

*Structural stage is not necessarily associated with stand age or to seral (species composition) development.

Table 16 Historic range of variability for ponderosa pine biophysical environment adapted from Ogden Vegetation Management EIS in relation to the Midstate Transmission Line project.

Stand Structure	Historic Range of Variability (%)	Existing Condition			Post Implementation of MEC Proposed Action		
		Acres	Percent	Relation to HRV	Acres	Percent	Relation to HRV
Stand Initiation	0 – 13	2,743	5.8	Within	2,793	5.9	Within
Stem Exclusion Closed Canopy	2 – 14	3,383	7.2	Within	3,333	7.1	Within
Understory Reinitiation	2 – 19	21,423	45.6	Above	21,423	45.6	Above
Multi-stratum Without Large Trees	4 – 31	19,102	40.7	Above	19,102	40.7	Above
Multi-stratum With Large	5 – 30	271	0.6	Below	271	0.6	Below

Stand Structure		Existing Condition			Post Implementation of MEC Proposed Action		
Trees							
Single-stratum with Large Trees	20 – 60	31	0.1	Below	31	0.1	Below

Alternative 1 – Direct, Indirect and Cumulative Effects

The activities proposed would not take place under this no action alternative. There would be no direct or indirect affects to HRV on the landscape level for either the Ogden or Flat HRV analysis areas. Current levels of acreage available for timber production would remain.

Alternative 2 – Direct, Indirect and Cumulative Effects

Alternative 2 would result in approximately 46 acres along the approximate 9 mile proposed transmission line being taken out of timber production. Implementation of this alternative would not result in a change in historic range of variability for ponderosa pine biophysical environment.

This project would remove approximately 46 acres of stem exclusion closed canopy stands and convert it to a stand initiation stand structure. Stem exclusion closed canopy and stand initiation stand structures would remain in the historic range of variability (Table 16). Late and old structures would not change as a result of project activities, remaining below historic levels while other stages are above or within historic ranges (Table 16). This project falls under Scenario A of the Eastside Screens. No stands within the project area were identified as having late and old structural characteristics, some trees (approximately 51 or 1.1 tree per acre) greater than 21 inches dbh would be felled and removed or kept in place. The number of large trees (over 21 inches dbh) within Zone 1 that would be cut is considered incidental when looking at the landscape. The removal of trees greater than 21 inches dbh would not change stand structure stage classifications.

Cumulative Effects

Implementation of the Midstate project would removal approximately 50 acres of General Forest for long-term timber production. This would represent about 0.10% of the of the ponderosa pine biophysical environment at the landscape scale. Approximately 8 acres of the proposed project overlaps with area treated under the Thor Stewardship Sale of the Ogden Vegetation Management project. The 8 acres of overlap with the Ogden Vegetation Management project would not affect HRV across that landscape. This project when combine with other past and present project would not affect LOS because this project is within stem exclusion closed canopy stand structures.

3.4.7 SCENERY

The goal for Scenic View, as stated in the Forest Plan is to provide Forest visitors with high quality scenery that represents the natural character of Central Oregon. General theme and objectives of scenic views are to manage landscapes seen from selected travel routes to maintain or enhance their appearance. To the casual observer, results of activities either would not be evident or would be visually subordinate to the natural landscape. Scenic quality objectives may not always be met when the viewer is within the special use site itself, due to the usual large scale of these facilities. However, when viewed from travel routes, recreation areas, and other sensitive viewer locations, Scenery Management Objectives should be met (LRMP, M9-83 page 4-130). Trees may be removed within the Scenic Views Management Area where necessary to permit access to geothermal sites, mineral development, electronic sites, utilities and other special use sites (LRMP, M9-84 page 4-130).

Existing Condition

The proposed transmission route would mostly parallel the existing BPA transmission. The proposed route would cross two Scenic Views Management Areas. The southern end crossing is along Finley Butte Road where it is classified as Moderate Scenic Integrity – SMS (Partial Retention – VMS). This means any changes to the existing condition would be allowed if the landscape appears slightly altered and as long as management activities remain visually subordinate to the character of the landscape.

Further north, the transmission line would cross Forest Road 21, the main entry to Newberry National Volcanic Monument, where it is classified as High Scenic Integrity – SMS (Retention – VMS). This means any changes to the existing landscape character must have little or no deviation from what makes it appealing and attractive to visitors and local residents.

The transmission line would run west 1.5 miles to the north side of Forest Road 9735 and cross U.S. Highway 97. It then runs west along the north side of LaPine State Recreation Road and connects to Midstate Electric's State Park Substation. In the new transmission line development along this section, a portion crosses BLM lands and a portion crosses Forest Service lands which are within a General Forest Management Area and outside of any Scenic Views Management Areas although highly visible from those traveling on Forest Road 9735 and U.S. Highway 97.

Most of the proposed transmission route is adjacent to BPA's existing 230-kilovolt transmission line and would parallel the existing BPA 125-foot wide transmission line for 8plus miles. Scenic quality in the area is typical for a transmission line with an opening throughout a mostly ponderosa pine forest. There are numerous user-created open play areas especially on the private land section of the existing BPA transmission line corridor.

Alternative 1 – Direct, Indirect, and Cumulative Impacts

There would be no direct or indirect effects to scenic resources since proposed activities would not occur. The route proposed by Midstate parallels the existing BPA transmission line, this line would continue to remain visible to a casual forest visitor. Since there is no direct or indirect effects there is no overlap in time and space with activities and effects, therefore, there would be no cumulative effects.

Alternative 2 – Direct, Indirect, and Cumulative Effects

There are 12 key viewpoints selected along the proposed transmission route. Key viewpoints 1 through 3 are located on the southern end of the proposed transmission route that crosses Finley Butte Road and are within a Scenic Views Management Area classified as Moderate Scenic Integrity – SMS (Partial Retention – VMS). Key viewpoints 4 through 8 are located on the northern end of the proposed transmission route that crossed Forest Service road (FSR) 21, the entry to Newberry National Volcanic Monument, and within a Scenic Views Management classified as High Scenic Integrity – SMS (Retention – VMS). Key viewpoints 9 through 12 are located where the proposed transmission route crosses FSR 9735, goes west along the north side of FSR 9735, and then crosses U.S. Highway 97.

Viewpoint 1



Figure 21 Viewpoint 1 crossing Finley Butte road and paralleling BPA existing transmission line

This is a view to the south of the existing BPA transmission line as it crosses Finley Butte road (Figure 21). Those traveling on Finley Butte road would see a wider opening of 130 feet that extends back away from the road for 500 feet. The duration of viewing this opening adjacent to an existing opening would be a short interval of time with rural Forest Service Road speeds of 45-55 mph on Finley Butte road. It would be a much wider opening but not a major distraction to the existing landscape character of this area so would meet the Standards and Guidelines for scenic quality.

Viewpoint 2



Figure 22 Viewpoint 2 south on Finley Butte road at the gated road to the Midstate transmission site.

This is a view to the south on Finley Butte road of a gated gravel road to the Midstate transmission site (Figure 22). Those traveling on Finley Butte road would see a wider opening of 130 feet although the duration of viewing this opening adjacent to an existing opening would be a short interval of time with rural Forest Service road speeds of 45 to 55 mph on Finley road. It would be a much wider opening but not a major distraction to the existing landscape character of this area so would meet the Standards and Guidelines for scenic quality.

Viewpoint 3



Figure 23 Viewpoint 3 to the west on Finley Butte road.

This is a view to the west on Finley Butte road where the BPA transmission line crosses the road on the southern end of the proposed transmission route (Figure 23). Those traveling on Finley Butte road would continue to see overhead transmission lines and a wider opening of 130 feet. The duration of viewing this opening adjacent to an existing opening would be a short interval of time with rural Forest Service road speeds of 45 to 55 mph on Finley Butte road. It would be a much wider opening but not a major distraction to the existing landscape character of this area so would meet the Standards and Guidelines for scenic quality.

Viewpoint 4



Figure 24 Viewpoint 4 south on forest Service road 21.

This is a view of adjacent private land, to the south on FSR 21 of the existing BPA transmission line corridor (Figure 24). There has been a lot of OHV use in this corridor due to the lack of vegetation, tire and tread tracks, as well as dusty conditions. Those traveling along FSR 21 to and from Newberry National Volcanic Monument would see a wider 130 foot wide opening with transmission lines and two poles (50 feet between poles and 40 feet on the outside of each pole) when looking off the road to the north or south. The existing landscape character of the immediate area along an existing transmission line corridor would result in a much wider opening but not create a major distraction so would meet the Standards and Guidelines for scenic quality.

Viewpoint 5



Figure 25 Viewpoint 5 to the north of FSR 21.

This is a view of adjacent private land to the north on FSR 21 of the existing BPA transmission line corridor play area as it crossed private land (Figure 25). There has been a lot of OHV use in this corridor due to the lack of vegetation, tire and tread tracks, as well as dusty conditions. Those traveling along FSR 21 to and from Newberry National Volcanic Monument would see a wider 130 foot wide opening with transmission lines and two poles (50 feet between poles and 40 feet on the outside of each pole) when looking off the road to the north or south. The existing landscape character of the immediate area along an existing transmission line corridor would result in a much wider opening but not create a major distraction so would meet the Standards and Guidelines for scenic quality.

Viewpoint 6



Figure 26 Viewpoint 6 to the north near FSR 21.

This is a view to the north near FSR 21 on the existing BPA transmission line corridor (Figure 26). There has been a lot of OHV use in this corridor due to the lack of vegetation, tire and tread tracks, as well as dusty conditions. Those traveling along FSR 21 to and from Newberry National Volcanic Monument would see a wider 130 foot wide opening with transmission lines and two poles (50 feet between poles and 40 feet on the outside of each pole) when looking off the road to the north or south. The existing landscape character of the immediate area along an existing transmission line corridor would result in a much wider opening but not create a major distraction so would meet the Standards and Guidelines for scenic quality.

Viewpoint 7



Figure 27 Viewpoint 7 to the north looking at FSR 21 from the existing BPA transmission line.

This is a view to the north looking at FSR 21 from the existing BPA transmission line corridor. There has been a lot of OHV use in this corridor due to the lack of vegetation, tire and tread tracks, as well as dusty conditions. Those traveling along FSR 21 to and from Newberry National Volcanic Monument would see a wider 130 foot wide opening with transmission lines and two poles (50 feet between poles and 40 feet on the outside of each pole) when looking off the road to the north or south. The existing landscape character of the immediate area along an existing transmission line corridor would result in a much wider opening but not create a major distraction so would meet the Standards and Guidelines for scenic quality.

Viewpoint 8



Figure 28 Viewpoint 8 looking south from FSR 21

This is a view to the south looking from FSR 21 to the existing BPA transmission line corridor (Figure 28). There has been a lot of OHV use in this corridor due to the lack of vegetation, tire and tread tracks, as well as dusty conditions. Those traveling along FSR 21 to and from Newberry National Volcanic Monument would see a wider 130 foot wide opening with transmission lines and two poles (50 feet between poles and 40 feet on the outside of each pole) when looking off the road to the north or Figure 28south. The existing landscape character of the immediate area along an existing transmission line corridor would result in a much wider opening but not create a major distraction so would meet the Standards and Guidelines for scenic quality.

Viewpoint 9

Figure 29 Viewpoint 9 to the north looking at FSR 9735.

This is a view to the north looking at FSR 9735 on the existing BPA transmission line corridor. Those traveling along FSR 9735 would see the proposed transmission route along the north side of the road. The impacts to scenic quality would be much higher with new development along the road as opposed to the other situations where an existing transmission line corridor is being widened and is less visible to travelers.

Viewpoint 10



Figure 30 Viewpoint 10 adjacent to the existing BPA transmission line crossing FSR 9735.

This is a view to the east adjacent to the existing BPA transmission line crossing FSR 9735. Those traveling along FSR 9735 would see the proposed transmission route along the north side of the road. The impacts to scenic quality would be much higher with new development along the road as opposed to the other situations where an existing transmission line corridor is being widened and is less visible to travelers.

Viewpoint 11



Figure 31 Viewpoint 11 adjacent to the BPA transmission line crossing FSR 9735.

This is a view to the west adjacent to the BPA transmission line crossing FSR 9735 (Figure 31). Those traveling along FSR 9735 would see the proposed transmission route along the north side of the road. The impacts to scenic quality would be much higher with new development along the road

as opposed to the other situations where an existing transmission line corridor is being widened and is less visible to travelers.

Viewpoint 12



Figure 32 Viewpoint 12 to the south crossing FSR 9735.

This is a view to the south at the existing BPA transmission line crossing FSR 9735. Those traveling along FSR 9735 would see the proposed transmission route along the north side of the road. The impacts to scenic quality would be much higher with new development along the road as opposed to the other situations where an existing transmission line corridor is being widened and is less visible to travelers.

Summary

The majority of the proposed Midstate transmission route runs parallel to the existing BPA transmission line. A majority of the project area is located along a utility corridor designated by the Deschutes National Forest LRMP. As stated in the Forest Plan utilities may be located in scenic view areas if the facilities and associated improvements are located, designed and maintained to blend with the characteristic landscape. Visual quality objectives may not always be met when the viewer is within the special use site itself, due to the usual large scale of these facilities. (LRMP 4-121). This project would not alter the area's scenic views and is consistent with Forest Plan direction.

3.4.8 FISHERIES AND AQUATIC RESOURCES

The proposed right-of-way corridor does cross Paulina Creek but this crossing is located on private lands. Otherwise, there are no other riparian area are along the proposed transmission route. There are no perennial, intermittent, or ephemeral stream channels, seeps, springs, wetlands, riparian areas, or potentially wet soils with seasonally high water tables or soils within the project area.

There would be no effects to water, riparian, and fisheries resources from implementation of the proposed project since these resources are not found within the project area. The project area lies within lands managed under the Inland Native Fish strategy (INFISH). There would be no effects to

the INFISH Riparian Management Objectives. There would be effects to Executive Order 11988, Floodplain Management and Executive Order 11990, Protection of Wetlands.

3.4.9 ROADS AND ENGINEERING

Forest Service (FS) Highway Safety Act (HAS) System and Primary Access Routes

The Midstate project is located in the south central portion of the Bend/Ft Rock Ranger District and is approximately 22.6 miles from Bend. The primary access to reach Midstate begins by traveling south over Oregon State Highway 97. The north easterly boundary of this project parallels Forest Service road (FSR) 9735 to where the BPA powerline crosses 1.35 miles from Hwy. 97. FSR 9735 is classified as a Forest Service maintenance level 2 road.

The western project boundary parallels the eastern edge of the BPA powerline, with the eastern project boundary 90 feet directly east of the western boundary. The projects southern boundary ends at the existing BPA Sub-Station approximately 0.10 miles south of FSR 22.

There are two highways and one county road that provide additional primary access. These roads are listed in Table 17 of this report.

Table 17 Primary access to and within the Midstate project area.

Road Number	Maintenance Level	Termini		Jurisdiction
		To	From	
Hwy. 97	N/A	City of Bend	FSR 9735	ODOT
FS Hwy. 22	N/A	Hwy. 97	Project Boundary	Deschutes County
Paulina Lake Hwy.	N/A	Hwy. 97	Project Boundary	Deschutes County
Roeland Rd.	2	Hwy. 97	Project Boundary	Deschutes County
FS Hwy 22	2	FS Boundary	Project Boundary	Forest Service

HAS System Roads

The FS Hwy 22 road is the only FS HSA route that provides the primary access to the project and the sub-station in addition to all facets of the National Forest. Road 22 surface consists of a bituminous surface treatment (multilayer chip seal). Due to the decline of road maintenance funding, National Forest roads are deficient in maintenance, however the condition of the roadway would still support this project.

FS Collector Non-HAS System Roads

Within this project there are only 1.5 miles of Forest Service Collector Roads (Table 18). The condition of the collector roads in this project would support this project without specified road work. The roads would need to be maintained during use. This includes maintaining of road prism, watering of roads to reduce dust and loss of fines. Midstate would need to submit an application for a Road-Use permit to perform any road related activities. All necessary road maintenance would be identified in the Road-Use permit (RUP).

ODOT is potentially looking to fence off a portion of land at the south end of this project. There has been discussion of gating FSR 2205. With the proposed mitigations of closed and decommissioned roads for this project and to reduce potential new impacts to FS land it is recommended that FSR 2205 not be gated and that ODOT fences along FSR 2205. This is and would need to remain the primary access road for FS lands to the west of the corridor.

Table 18 FS collector roads within the Midstate project area.

Road Number	Maintenance Level	Termini		Jurisdiction
		To	From	
9735000	2	Hwy. 97	East Project Boundary	Forest Service
9745000	2	Hwy. 97	East Project Boundary	Forest Service
2205000	2	FS Hwy. 22	FSR 2205449	Forest Service

FS Local Roads

Local roads in general are routes that are mostly native surfaced low traffic volume, single lane, in all but very few exceptions maintained for passage by high clearance vehicles with no consideration for use by passenger cars, there is no consideration for user comfort or convenience and typically use is discouraged with roads only being logged or brushed out as necessary to passage/travel for planned traffic. These roads do not receive reoccurring maintenance.

In this project the 012 road (Figure 33) would serve as the sole primary route of use along this corridor. Maintenance items shall consist of that necessary to sustain this road during the life of the project. This type of maintenance shall consists of providing dust abatement such as water to reduce the impact of pulverization of the native material and to keep travelers in the roadway. In addition, the need to spot surface in locations where the road way is being extremely impacted or becomes difficult to travel may be needed. Any material used in spot surfacing would be from a certified weed free source. The 012 travelway would be kept at the current width and travel beyond the existing travel way would not be allowed.

Being that the 012 road meanders through the BPA corridor and this proposed project would utilize this road extensively, it is important that Midstate limits the cross country impacts to the proposed pole placement site and that all travel be kept to the minimum size necessary to meet their objective.

As this project nears completion the 012 road would receive the adequate amount of post project maintenance necessary to achieve a state of “self-maintaining”. Restoration of drainage and armoring of drainage structures (rolling dips, waterbars and leadouts) are critical elements to achieve the desired effect. Other associated maintenance on these road types would include limited brushing, pre and post use blade and shaping of roadway to improve drainage.

Specified Road Work

There is no specified road work needed to support this project.

FS Closed Roads

There are no existing closed roads within the project area.

Road Recommendations

To reduce habitat fragmentation and mitigate the reduction of hiding cover from right-of-way clearing, approximately 10.64 miles of roads are proposed to be closed or decommissioned. Around 7 miles of road would be closed. Closed roads are not needed for current management, but are expected to be needed for future management activities. Closed roads could be used for administrative purposes.

Approximately 3 miles of road have been analyzed and identified as excess and no longer necessary for management of the land base. Decommissioning removes the road from the Forest inventory

system and in most cases obliterates the existing roadbed using various techniques to aid in the quick recovery of the disturbed area to a productive condition.

Road Closures

To support the loss of wildlife hiding cover from the impacts of this new corridor (Zone 1), the roads in Table 18 and Table 19 shown in Figure 33, have been identified to be closed/maintenance level 1 status. The closure method would be determined by the most effective means necessary to accomplish this objective. Upon project completion these roads would be returned to level 1 status and receive the maintenance necessary to allow the roads to a self-sustaining condition available for future long term needs. Maintenance level 1 roads are considered to be closed roads to general travel. The travel exception for maintenance level 1 roads are for activities such as administrative purposes, permit administration, fire suppression, etc. or by permittees under permit such as for grazing access.

It is recommended that FSR 2205 not be gated and that ODOT fences along FSR 2205 to minimize disturbance. If FSR 2205 was to be gated the likelihood of a breach around the gate is high, which could cause more damage.

Table 19 Roads in the Midstate project recommended to be closed.

Road Number	Length	Operational Maintenance Level	Objective Maintenance Level	Final Recommendations
2205020	1.06	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205300	0.47	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205320	0.72	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205490	1.50	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
2205497	0.25	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735052	0.64	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735060	1.19	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735061	0.38	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9735190	0.32	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745109	0.45	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745110	0.15	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745110	0.18	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745110	0.17	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
9745119	0.17	2- High Clearance Vehicles	2- High Clearance Vehicles	Close
Total	7.65			

Road Decommissioning

Listed in Table 20 and shown Figure 33, are roads that have been identified to be decommissioned. The intent for this land would be to return it to the natural state for this area. The preferred method for achieving this goal would be by subsoiling these areas to reduce compaction to encourage new growth and when conditions are suitable then seed or plant trees to promote and assist in the protection of soils from erosion.

Table 20 Roads recommended to be decommissioned in the Midstate project.

Road Number	Length	Operational Maintenance Level	Objective Maintenance Level	Final Recommendations
2205025	0.40	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205190	0.26	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205189	0.19	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205100	0.91	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
2205100	1.23	2- High Clearance Vehicles	2- High Clearance Vehicles	Decommission
Total	2.99			

Other Considerations

All roads leading to the public cemetery in Township 22 South, Range 11 East, Section 7 SE ¼, SW ¼ should be commissioned or closed for protection of this resource and to limit unwanted traffic through this area. These roads are included in Table 19 and Table 20 and are shown in Figure 33.

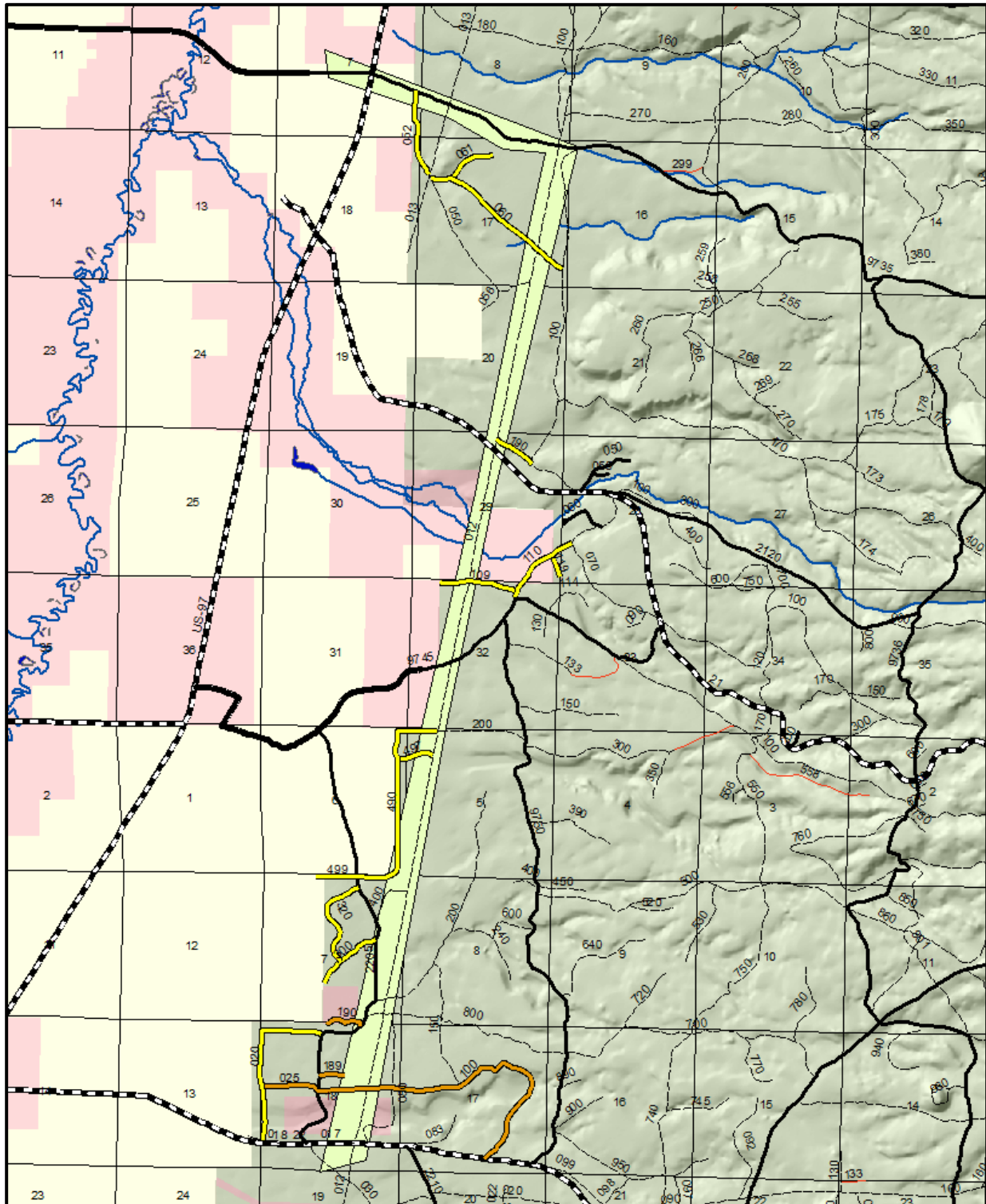


Figure 33 Proposed road closures and decommissioning (yellow segments are proposed to be closed and orange segments are proposed to be decommissioned).

Alternative 1 – Direct, Indirect and Cumulative Effects

This alternative would result in no direct, indirect or cumulative effects from the existing condition in the project area. Limited road maintenance would continue to occur where and when necessary to

support routine road activity. Nothing beyond routine would occur except in the event of an emergency.

Alternative 2 – Direct, Indirect and Cumulative Effects

Limited routine maintenance, when needed, would continue in the project area. The current road condition should be able to support project activities. Some maintenance may be needed to provide safe access. This type of maintenance shall consist of providing dust abatement such as water to reduce the impact of pulverization of the native material and to keep travelers in the roadway. In addition, the need to spot surface in locations where the road way is being extremely impacted or becomes difficult to travel may be needed.

This alternative would close and decommission approximately 10.64 miles of road. Road system effects were analyzed at the project area scale. This scale was chosen because transportation systems are affected locally by decommissioning and closure. Past, present and reasonably foreseeable future activities were analyzed. The present activity that may affect the road system is the Travel Management Rule and Motor Vehicle Use Map (MVUM) and the recent Minimal Road System (MRS) analysis. The MVUM map and the associated rules would make enforcement of road closures and off-road prohibitions more straightforward. These activities would result in a reduction in user-created roads and impacts from cross-country travel. The MRS reviewed and evaluated all the roads for future needs and to provide direction at the project scale. When combined with the decommissioning planned in the Midstate project these activities would result in a reduction of roads that are no longer needed for management purposes. These effects would not substantially affect the transportation system or limit user access.

3.4.10 HERITAGE

Introduction

The following section analyzes the potential effects of amending the existing Midstate Electric Cooperative Inc. (Midstate) Special Use Permit on historic properties. Midstate submitted an application to construct, operate, and maintain a new 115 kV transmission line to provide backup power and alleviate loading on the existing transmission line. Methods used to identify historic properties in the project area and mitigations to avoid adversely affecting significant archaeological sites are described.

Regulatory Framework / Management Direction

Management and protection of heritage resources on National Forest land is mandated by a variety of laws, executive orders, Federal regulations, and Forest Service policies. The National Historic Preservation Act of 1966, as amended, its associated implementing procedures in 36 CFR 800, and the Forest Service Manual (FSM) 2360 requires the Forest consider the impact of federally funded, permitted, or licensed activities on historic properties. “Historic properties” are defined as cultural resources eligible for inclusion or listed on the National Register of Historic Places (NRHP). The NRHP is the nation’s list of historic places worthy of preservation. For a cultural resource to be considered a historic property, it is typically at least 50-years old, retains important aspects of historic integrity, and meets one of the four NRHP eligibility criteria developed by the National Park Service (36 CFR 60.4). The eligibility criteria include: (a) be associated with events that have made a significant contribution to the broad patterns of history, (b) be associated with the lives of persons important in the past, (c) embody the distinctive characteristics of a type, period, or method of construction, or (d) have the potential to yield additional information in history or prehistory.

The Deschutes National Forest Land and Resource Management Plan (Forest Plan) recognizes the nonrenewable and generally fragile nature of cultural resources. The Forest Plan directs the Forest to comply with federal and state cultural resource regulations, to consult with designated representatives

of the Confederate Tribes of Warm Springs and Klamath tribal groups, and to protect cultural resources eligible to the NRHP from adverse effects through project design, monitoring, and coordination, and when avoidance is not possible, develop a professionally acceptable data recovery program.

Analysis Method

To comply with the National Historic Preservation Act and Forest Service management directives, Midstate contracted Historical Research Associates, Inc. (HRA) to identify historic properties that could be effected by the proposed action. HRA conducted a review of existing cultural resource information and completed pedestrian inventory for prehistoric and historic materials within the ROW. Survey transects were spaced at 10 to 20 meter intervals. Archaeological resources encountered during the survey were recorded using Oregon State Historic Preservation Office documentation protocols and forms (SHPO 2016). Shovel probes were used to help determine site boundaries. Prior to fieldwork, Midstate staked the locations of the individual power poles. HRA excavated shovel probes at every-other pole location to determine if subsurface cultural material was present and could be effected by auguring for the power pole placement.

Results of the survey and mitigation recommendations for the construction of Midstate's proposed powerline was accepted by the State Historic Preservation Office in April of 2017 (SHPO Case No.: 17-0376). Intensive cultural resource survey of the 50 foot hazardous tree removal area outside the ROW is not required under Appendix A (#12, a) and Appendix B (#20) of the Programmatic Agreement among USDA Forest Service Pacific Northwest Region (Region 6), the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Officer Regarding Cultural Resource Management in the State of Oregon by the USDA Forest Service provided trees are hand felled and left in place. Forest Service archaeologists completed intensive cultural resource survey for the proposed travel management changes associated with this project. The cultural resource inventory report was submitted to SHPO June 19th, 2017 with a finding of "historic properties avoided" (FS Project No.: R2017060103022).

Existing Condition

There have been 42 cultural resource inventories within 1-mile of the project area. Both prehistoric and historic sites have been documented in the vicinity of the APE. Prehistoric resources consist of scatters of lithic debitage, mostly obsidian, resulting from the manufacture of stone tools. Historic sites include the remains of logging camps, railroad grades, and miscellaneous refuse dumps.

Historic properties in the area of potential effect would be either avoided or mitigated per 36 CFR 800. Information on the location and character of archaeological sites is protected under the Freedom of Information Act [FOIA, 5 U.S.C. 552(b)(3)].

Alternative 1 – Direct, Indirect and Cumulative Effects

Under this alternative, the Forest Service would not issue a special use permit to Midstate for the construction of a backup transmission line and would not close or decommission roads.

Under the no action alternative there would be no direct, indirect, or cumulative impacts to historic properties.

Alternative 2 – Direct, Indirect and Cumulative Effects

Under Alternative 2, Midstate would construct a 40-foot ROW (Zone 1) adjacent to the BPA ROW. Corridors would be constructed from the BPA Substation to Finley Butte Road and along North McKay Road to accommodate the new line. Hazardous trees within 50 feet of Zone 1 would be hand felled and left in place (referred to as Zone 2). A number of road closures and decommissioning is also proposed.

Direct Effects

Direct effects to cultural resources include the potential damage or displacement of archaeological material during timber harvesting activities in Zone 1 and from the use of heavy equipment during the installation of the new powerline. A 40 foot ROW would be cleared of vegetation using standard mechanized logging equipment and methods. Timber would be removed and slash piles would be burned. The placement of new power poles would involve use of an auger approximately 2 to 3 feet wide, reaching a depth of approximately 10 feet deep. Road closures may involve the use of heavy equipment to create blockades and decommissioning typically includes sub-soiling to promote revegetation. The actions described above are ground disturbing in nature and can result in artifact breakage or alteration of the horizontal and vertical distribution of cultural material. Mitigation measures are described in Chapter 2.3 Project Design Criteria.

The Forest Service also evaluated the effect of visual changes to the landscape on historic properties. As the new powerline would parallel an existing powerline, there would be no substantial alteration of the viewshed.

Indirect Effects

Indirect effects could involve changes in the pattern of land use, including an increase in public access and expansion of an already vast network of unauthorized roads and trails. The Forest is attempting to mitigate these impacts through the closure of a number of roads in the vicinity of the new powerline.

Cumulative Effects

The cumulative effects of infrastructure development on historic properties often occurs incrementally and can be catastrophic to cultural resources in the long term. There are no foreseeable future actions, such as expansion of the new line, building of a new substation, or creation of new transportation routes, anticipated by Midstate or the Forest Service. Therefore, cumulative impacts are not expected to result in adverse effects to historic properties.

Summary

With the implementation of the mitigation measures as described in Chapter 2.3 Project Design Criteria this transmission line would result in no adverse effects to historic properties.

3.4.11 FOREST PLAN AMENDMENT

The responsible official has determined that in order to meet the purpose and need of this project, the 1990 Deschutes Forest Plan as amended by the Eastside Screens would need to be amended. The Forest Plan Amendment is specific to this project area (in particular Zone 1) and proposed activities. This amendment addresses the Eastside Screens Standard 6(d) Scenario A (2)(a): “Maintain all remnant late and old seral and/or structural live trees ≥ 21 inches dbh that currently exist in within stands proposed for harvest activities.” The purpose of the Midstate project is to construct a backup transmission line in order to provide reliable power to communities and is not a vegetation management project. A 40 foot ROW cleared of trees would be needed to construct the backup transmission line, this would remove approximately 46.1 acres of FS lands, along the 8.4 mile proposed route out of timber production. The intent of this project is not to manage stands for late and old structure but to build a transmission line. This a project is not part of the Districts timber sale program. Timber removal would be done by Midstate and the Forest Service would sell the timber at current appraised value directly to Midstate, whereas Eastside Screens is applicable to timber sale projects.

This amendment is consistent with direction provided in 36 CFR 219 (see Planning Regulation Consistency below).

Need for Change

This amendment is needed for Zone 1 of the proposed line. It is not feasibly possible for Midstate to leave trees in Zone 1, there are approximately 51 trees ≥ 21 inches dbh, roughly 1.1 trees per acre in this zone. Midstate needs to safeguard the reliability of their transmission delivery and by keeping Zone 1 cleared it allows Midstate to protect their system and minimize outages. Trees can compromise safety by arcing or sparking which can lead to fire or electrocution. Trees can also cause interruptions in electric service if adequate clearances are not maintained. Low-growing vegetation such as shrubs and brush do not compromise the line.

Stand structures found in the ROW (Zone 1) are classified as either stem exclusion closed canopy (approximately 5%) and stand initiation (approximately 95%). Field surveys confirmed that there are no stands which could be classified as having late and old structural characteristics existed in the ROW.

Effects

The 3.4.6 Forested Vegetation section in Chapter 3 of this EA and the associated silviculture report located in the project record includes impacts of the Forest Plan amendment. The special boundary for direct and indirect effects includes the project area, in particular the right-of-way (Zone 1) and cumulative effects is bound by the entire Deschutes National Forest.

Alternative 1

Under the no action alternative, the Forest Service would not issue a special use permit to Midstate for the construction of a backup transmission line. The removal of approximately 51 trees ≥ 21 inches dbh would not occur under this alternative.

Alternative 2 – Direct and Indirect Effects

This alternative would authorize a special use permit allowing Midstate to construct a backup transmission line to ensure reliable power to communities. The majority of the line parallels the existing BPA line and is within a designated utility in order to minimize disturbance as much as possible.

Approximately 51 trees ≥ 21 inches dbh are located in the right-of-way (Zone 1) on Forest Service lands. Stands structure within the project area are stem exclusion closed canopy and stand initiation. No stands were identified as late and old structures. The Eastside Screens were intended to avoid management activities in the interim that would move conditions away from the HRV. Removal of the approximately 51 trees ≥ 21 inches dbh would not result in a change of in late and old structures since this structure is not within project area. This project would remove approximately 46.1 acres of stem exclusion closed canopy stands and convert it to a stand initiation stand structure. Stem exclusion closed canopy and stand initiation stand structures would remain in the historic range of variability (Table 16). The number of large trees (≥ 21 inches dbh) within Zone 1 that would be cut is considered incidental when looking at the landscape. The removal of trees greater than 21 inches dbh would not change stand structure stage classifications.

Continued viability of wildlife species (Chapter 1.9 Project Record and 3.4.1 Wildlife) is expected on the Deschutes National Forest because the amount of area affected is minimal ($<1\%$) and project design features (Chapter 2.3 Project Design Criteria) would mitigate any unwanted effects.

This alternative would be consistent with the substantive provision that directly apply (219.10(a)(3) and 219.11(c)), discussed in Planning Regulation Consistency, below.

Alternative 2 – Cumulative Effects

Cumulative effects, as stated above, associated with the Forest Plan amendment are addressed at the watershed and Forest scale. The watershed scale was considered because the project itself is very small. The majority of the proposed transmission line is in the Lower Little Deschutes watershed and a very small portion is within the Long Prairie watershed. The Forest-level scale was selected in order to reflect similar Forest Plan amendments within the Deschutes National Forest.

All past management decisions on the Deschutes National Forest that amended the Eastside Screens is located in the table below. There are no identified reasonably foreseeable future actions that propose to amend the Eastside Screens on the Deschutes National Forest.

Table 21 Past project on the Deschutes National Forest that has non-significant project specific amendments to the Eastside Screens.

Year	Decision Name	Amendment
2000	7 th Mountain Rock Pit Expansion Environmental Assessment and Decision Notice	Amend the Eastside Screens
2010	EXF Thinning, Fuels Reduction and Research Environmental Impact Statement and Record of Decision	Two amendments regarding the Eastside Screens. 1) Allows harvest in LOS when stands are below HRV; and 2) allows the removal of trees ≥ 21 inch dbh in five units. The second Forest Plan amendment would allow thinning of trees over 21 inches dbh on 266 acres. This is a minor change in one interim standard that would not alter the multiple-use goals and objectives for long-term land and resource management. The proposed thinning, including removing trees $>21''$ DBH, will leave the largest trees in any given portion of the stands to meet the target basal area (the vast majority of trees that will be removed during thinning are less than $21''$ DBH; see Tables 38 and 40). The resulting structure will move the LOS ponderosa pine in the Lookout Mountain Unit closer to more resilient conditions that could develop old-growth structural characteristics with trees able to survive for centuries.
2013	Rim Paunina Environmental Impact Statement and Record of Decision	Amended the Eastside Screens standard B6(d) Scenario A – amendment allows harvest in LOS stages (619 acres) that are below HRV when the standard prohibits harvest in LOS when below HRV. There is no net loss of LOS after treatment.
2013	West Bend Vegetation Management Environmental Impact Statement and Record of Decision	Amends Eastside Screens standard B6(d) Scenario A – allows harvest in LOS in stages that are below HRV when the standard prohibits harvest in LOS. There is no net loss of LOS.
2014	Rocket Vegetation Management Environmental Assessment and Decision Notice	Amends the Eastside Screens standard B6(d) Scenario A – amendment allows harvest in LOS (78 acres) in stages that are below HRV when the standard prohibits harvest in LOS when below LOS. No trees over $21''$ will be harvested. All acres will remain in an LOS category, but some acres move from the late-closed stage to the late-open stage.

Of the past projects that have amended the Eastside Screens the EXF project amended the Eastside screens for the removal of trees ≥ 21 inches dbh. The other projects (Rim Paunina, West Bend, and

Rocket) amended the Eastside Screens to allow for timber harvest in stand structures that are below HRV. It is unknown why the 7th Mountain Rock Pit Expansion project amended the Screens for and the 2000 NEPA document could not be found in the files. For this analysis, those projects that did not amend the Eastside Screens for the removal of trees ≥ 21 inches would not be evaluated cumulatively with this project.

The Midstate project is expected to remove approximately 51 trees ≥ 21 inches dbh, which equates to approximately 1.1 tree per acre along the 9.3 mile line (Table 2). On average, species composition for stands was approximately 70% lodgepole pine and 30% ponderosa pine. Structurally, stands can be classified as either Stand Initiation or Stem Exclusion Closed Canopy. As stated above in the direct and indirect effects, the removal of large trees would not change stand structure stage classifications nor would it change LOS conditions.

To meet a residual stand basal area of 53 (plus or minus 5) the EXF Record of Decision authorized amending the 21 inch maximum diameter Eastside Screen direction for this project so that larger trees could be cut and removed in the timber sale. The largest trees onsite are to be retained to provide the desired residual basal area. The resulting structure would move the LOS ponderosa pine in the Lookout Mountain Unit of the Pringle Falls Experimental Forest closer to more resilient conditions that could develop old-growth structural characteristics with trees able to survive for centuries.

Table 22. Proposed thinning in EXF units that would remove trees ≥ 21 inches dbh.

Unit	Acres Affected	Current Basal Area	Treatment Type	Target Basal Area
31	3	184	thin to 50% UMZ	70
34	17	184	thin to 75% UMZ	105
42	29	154	thin to UMZ	70
43	70	151	thin to 75% UMZ	53
44	147	151	thin to 75% UMZ	53
Total	266			

Cumulatively, the two projects (Midstate and EXF) would remove large trees (≥ 21 inches dbh) on the Deschutes National Forest. Late and old structure would not be effected by the removal of large trees. On the scale of the entire Deschutes National Forest, this cumulative effect is extremely small. In the absence of foreseeable future projects that would harvest large trees, the effect would be limited to the treated acres and is not expected to add incremental effects that would reduce the occurrence of trees 21 inches dbh and larger on the Deschutes Forest.

Planning Regulation Consistency

The Responsible Official determines the appropriate scope and scale of Forest Plan amendments and apply those provisions of 36 CFR 219.8 through 219.11 that directly apply to the proposed amendment. In the following section, the provisions of 36 CFR 219.8 through 219.11 that directly apply to the proposed amendment are briefly identified and discussed.

An assessment, located in the project record, discusses all the provisions of 36 CFR 219.8 through 219.11 that either apply or do not directly apply, along with the rationale for why those provisions are not directly applicable to the proposed amendment.

219.10(a)(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.

This substantive requirement does directly apply because the amendment does involve the management and placement of a transmission line. A majority of the project area is located along a utility corridor designated by the Deschutes National Forest LRMP.

219.11(c) Timber harvest for purposes other than timber production. Except as provided in paragraph (d) of this section, the plan may include plan components to allow for timber harvest for purposes other than timber production throughout the plan area, or portions of the plan area, as a tool to assist in achieving or maintaining one or more applicable desired conditions or objectives of the plan in order to protect other multiple-use values, and for salvage, sanitation, or public health or safety. Examples of using timber harvest to protect other multiple use values may include improving wildlife or fish habitat, thinning to reduce fire risk, or restoring meadow or savanna ecosystems where trees have invaded.

This substantive requirement directly applies to the need for change of the site specific conditions in the Midstate project area. Timber harvest is proposed as a tool to respond to a request by Midstate to construct a backup transmission line. Currently, Midstate has only one transmission line that was built in 1972 which supports its entire system. Any power outage along this transmission line for maintenance or from hazards, such as falling trees could disconnect all of Midstate's customers. The existing transmission line has approximately a 50-year lifespan, which is almost expired. In order to perform maintenance to the existing line, it would need to be de-energized to allow Midstate to replace poles along the line; work that is easier and safer to do when power to the line is off. It is not feasibly possible for Midstate to leave trees in the right-of-way, there are approximately 51 trees ≥ 21 inches dbh, roughly 1.1 trees per acre in this zone. Midstate needs to safeguard the reliability of their transmission delivery and by keeping the right-of-way clear of trees, it allows Midstate to protect their system and minimize outages. Trees can compromise safety by arcing or sparking which can lead to fire or electrocution. Trees can also cause interruptions in electric service if adequate clearances are not maintained.

3.5 REQUIRED AND ADDITIONAL DISCLOSURES AND CONSISTENCY WITH LAWS, REGULATIONS, POLICY AND PROCEDURES

This section discloses the effects of the alternatives on the human environment as specified by law, regulation, policy, or executive order. This section includes a brief summary of those laws, policies, and executive orders that are relevant to the proposed actions considered in this EA.

3.5.1 THE AMERICAN ANTIQUITIES ACT OF 1906

This Act makes it illegal to appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument or any object of antiquity, situated on lands owned by the Government of the United States, without permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated.

Following guidelines in a 2004 Programmatic Agreement among USDA-Forest Service, the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Office (SHPO), a finding of "No Historic Properties Affected" was determined under stipulation III(B)1 of the Programmatic Agreement.

In accordance with 36 CFR 800 and Section 106 of the National Historic Preservation Act (1966) all sites, despite eligibility status would be avoided. All eligible and potentially eligible (undetermined) sites would be protected throughout the life of the project. Protection of these sites shall be accomplished through avoidance by ground-disturbing activities.

Should unexpected heritage resources be encountered during project implementation, these resources would also be evaluated and significant resources would be avoided or mitigated as described above.

No impacts to any known cultural resources would result from implementation of this project.

3.5.2 TRIBAL TREATY RIGHTS

Treaties provide that Native Americans would continue to have the right to erect suitable buildings for fish curing, privileges of hunting, gathering roots and berries, and pasturing stock on unclaimed lands. All alternatives are equal in their treatment of treaty rights and are expected to maintain treaty rights and opportunities into the future.

Potentially affected Tribes, the Burns Paiute, The Klamath Tribe and the Confederated Tribes of the Warm Springs, were contacted during the scoping process. No treaty resources were identified by any Tribe as at risk. Coordination with the Tribes is going.

3.5.3 PRIME FARMLANDS, RANGE LAND, AND FOREST LAND

The Secretary of Agriculture issued memorandum 1827 which is intended to protect prime farm lands and rangelands. The Midstate project area does not contain any prime farmlands or rangelands. Prime forest lands, as defined in the memorandum, is not applicable to lands within the NFS.

3.5.4 INVENTORIED ROADLESS, WILDERNESS, RESEARCH NATURAL AREAS, EXPERIMENTAL FORESTS

No research natural areas, experimental forests, or wilderness areas are within or adjacent to the project area.

3.5.6 PUBLIC HEALTH AND SAFETY

The effects of implementation are well known, none are unusual or unique to this project or involve any unknown risks. Recreationists and the public (private land owners) could encounter construction traffic, but these encounters would be short term and localized. Potential fire risk would be minimized because Midstate would follow seasonal Industrial Fire Precaution Level restriction and burn all landing piles in Zone 1 prior to installing the transmission line (Chapter 2.3 Project Design Criteria). The effects on the quality of the human environment are not likely to be highly controversial, based on public participation.

3.5.7 ENERGY REQUIREMENTS

There would be no unusual energy requirements for implementing any of the alternatives. The purpose of the Midstate 115 kV transmission line is to construct a backup transmission line in order to provide reliable power to communities and alleviate the loading on their existing transmission line.

3.5.8 INCOMPLETE AND UNAVAILABLE INFORMATION

The Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 CFR 1502.22) require that a federal agency identify relevant information that may be incomplete or unavailable.

Knowledge is, and always will be, incomplete regarding many aspects of terrestrial and aquatic species and their habitats, geology of specific areas, and the economy. The proposed action was evaluated using the best available information. No missing information was deemed to be essential to a reasoned choice among alternatives being considered.

3.5.9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible resource commitments are actions that either deplete a non-renewable resource or disturb another resource to the point that it cannot be renewed within 100 years. There are no known significant irreversible resource commitments or irretrievable loss wildlife habitats, soil production, or water quality from actions initiated under Alternative 2. The development of the transmission line and the clearing of trees in the right-of-way (Zone 1) is considered irretrievable commitment of land to a non-timbered state until such time that the transmission line is abandon and the disturbed sites are returned back to a productive capacity.

3.5.10 SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

The Multiple Use-Sustained Yield Act of 1960 requires the Forest Service to manage NFS lands for multiple uses (including timber, recreation, fish and wildlife, range, and watershed). All renewable resources are to be managed in such a way that they are there for future generations. This chapter and the specialist reports prepared for this project provide the required disclosure of effects from the proposed backup transmission line allowed under the Alternative 2 and under the current condition, no action, Alternative 1. The action alternative is not expected to create any impacts that would cause irreversible damage.

3.5.11 BIOLOGICAL DIVERSITY

All existing native and desirable introduced species and communities are maintained with the proposed project. The physical and biological effects are limited to this analysis area. No actions are proposed which are considered to be precedent setting. Biological diversity would not be affected by this project.

3.5.12 REHABILITATION ACT OF 1973 - PERSONS WITH DISABILITIES

Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. There is no legal requirement to allow people with disabilities use of motor vehicles on roads, trails, or other areas that are closed to motor vehicles. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory.

3.5.13 USDA CIVIL RIGHTS POLICY

The Civil Rights Policy for the USDA, Departmental Regulation 4300-4 dated May 30, 2003, states that the following are among the civil rights strategic goals; (1) managers, supervisors, and other employees are held accountable for ensuring that USDA customers are treated fairly and equitably, with dignity and respect; and (2) equal access is assured and equal treatment is provided in the delivery of USDA programs and services for all customers. This is the standard for service to all customers regardless of race, sex, national origin, age, or disabilities.

Disparate impact, a theory of discrimination, has been applied to this projects planning process in order to reveal any such negative effects that may unfairly and inequitably impact beneficiaries regarding program development, administration, and delivery. The objectives of this review and analysis are to prevent disparate treatment and minimize discrimination against minorities, women

and persons with disabilities and to ensure compliance with all civil rights statutes, Federal regulations, and USDA policies and procedures.

The project, given the size of potential social and economic effects, are not likely to result in civil rights impacts to Forest Service employees or customers of its program.

3.5.14 EXECUTIVE ORDERS

Executive Order 12898 Environmental Justice in Minority Populations and Low-income Populations (February 11, 1994)

Executive Order 12898 directs the agency to identify and address, “...as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations....” The intent of the order is to assure the fair treatment and meaningful involvement and consideration of all people. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from the execution of a federal actions. Outreach and public involvement for this project has been extensive and at various scales within various communities of interest.

In order to identify and address environmental justice concerns, the EO states that each agency shall analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and native Americans as part of the NEPA process.

There would be no discernible impacts among the alternative in the effects on Native Americans, women, other minorities, or the Civil Rights of any American citizen.

The proposed project does not appear to have a disproportionately high or adverse effect on minority or low-income populations. Scoping did not reveal any issues or concerns associated with the principles of Environmental Justice. No mitigation measures to offset or improve adverse effects to these populations have been identified. All interested and affected parties will continue to be involved with the public involvement and decision process.

Executive Orders 11988 Wetlands and 11990 Floodplains

Executive orders 11988 and 11990 require protection of floodplains and wetlands. The project would have no effect on Executive orders 11988 and 11990 as adverse effects are avoided because there are no wetlands or floodplain on FS lands in the project area.

CHAPTER 4 – CONSULTATION AND COORDINATION

4.1 PUBLIC INVOLVEMENT

The Midstate Substation to State Rec Road Transmission Line project was first published to the Deschutes and Ochoco National Forest project webpage on April 17, 2015 at:

<http://www.fs.usda.gov/project/?project=46803>.

This project was first published in the Deschutes National Schedule of Proposed Actions (SOPA), a quarterly publication, in July 2015 and has appeared in each quarterly SOPA since then. This is a quarterly report that is distributed to interested individuals, organizations, and agencies Forest-wide. The SOPA is automatically updated and available on the Deschutes and Ochoco National Forest webpage at: <http://www.fs.fed.us/sopa/forest-level.php?110601>.

A detailed description of the proposed action was mailed on November 15, 2015, to approximately 380 forest users and concerned publics, soliciting comments and concerns related to this project. This letter was also mailed to the Burns Paiute Tribe, The Klamath Tribe, and the Confederated Tribes of the Warm Springs. Coordination and consultation with the tribes is ongoing. Three responses were received, which were considered and evaluated. Discussion of public comments can be found in Chapter 1.7 Issues and in Chapter 2.4 Alternatives Considered but Eliminated from Detailed Study. This letter was also mailed to the Burns Paiute Tribe, The Klamath Tribe, and the Confederated Tribes of the Warm Springs. Coordination and consultation with the tribes is ongoing.

4.2 CONSULTATION WITH OTHERS

Consultation has occurred with the Oregon State Historic Preservation Office (SHPO) following guidelines in the Regional Programmatic Agreement among USDA-Forest Service, the Advisory Council on Historic Preservation, and the Oregon SHPO

The consultation with the Burns Paiute Tribe, The Klamath Tribe, and Confederated Tribes of the Warm Springs has occurred and coordination is ongoing.

A detailed description of the proposed action was mailed on November 15, 2015, to approximately 380 forest users and concerned publics, soliciting comments and concerns related to this project (the complete mail list located in the project record).

4.3 INTERDISCIPLINARY PARTICIPATION

Below are the members of the interdisciplinary team responsible for coordination, conducting and contributing the environmental analysis for this project

ID Team Member	Title
Lisa Dilley	ID Team Leader, Special Uses
Alicia Underhill	ID Team Leader, NEPA Planner
Katy Polluconi	Special Uses
Barbara Webb	Wildlife Biologist
Eric Werner and Christie Lee-McKinney	Silviculture
Marlo Fisher and Charmane Powers	Botanist
Sarah Hash	Soil Scientist
Robert Newey	Fire and Fuels
Jillian Gantt	Cultural and Heritage Resources
Steve Bigby	Road Manager
Tom Walker	Fisheries

Robin Gyorgyfalvy

Jana Johnson

Maureen Durrant

Ryan Grim

Scenery

Recreation

GIS

Small Sales/Special Forest Products

LITERATURE CITED

- Agee, James, K. 1993. *Fire Ecology of Pacific Northwest Forests*. Island Press. Washington D.C. 384 p.
- APLIC. 2006. Avian powerline interaction committee: suggested practices for avian protection on powerlines – the state of the art in 2006. Edison Electric Institute, APLIC and the California Energy Commission. Washington DC and Sacramento, CA.
- Altman, B. 2000. Conservation strategy for landbirds of the east-slope of the Cascade Mountains in Oregon and Washington. Version 1.0. Oregon-Washington Partners in Flight. 81 pp.
- Bend-Fort Rock District Files. Deschutes National Forest. 63095 Deschutes Market Road. Bend, OR.
- Booser, Joanna; White, Jim. Circa 1996. Calculating Maximum Stand Density Indexes (SDI) for Deschutes National Forest Plant Associations. Internal Rep. Bend, OR: U.S. Department of Agriculture, Forest Service.
- Brown, J.K., E.D. Reinhardt, and K.A. Kylie. 2003. Coarse woody debris: managing benefits and fire hazard in the recovering forest. Gen. Tech. Rep. RMRS-GTR-105. USDA Forest Service, Rocky Mountain Research Station, Ogden, UT. 16 pp.
- Bull, E.L., G.G. Parks, and T.R. Torgerson. 1997. Trees and logs important to wildlife in the interior Columbia river basin. General Technical Report PNW-GTR-39. USDA Forest Service. Pacific Northwest Research Station. 55 pp.
- Copeland, J.P. 1996. Biology of the wolverine in Central Idaho. Master's Thesis. University of Idaho. 137 pp.
- Cushman, K. A. and C. A. Pearl. 2007. A conservation assessment for the Oregon spotted frog (*Rana pretiosa*). U.S. Department of Agriculture Forest Service Region 6, U. S. Department of Interior Bureau of Land Management Oregon and Washington. 46pp.
- Csuti, B., AL. J. Kimerling, T. AL. O'Neil, M. M. Shaughnessy, E. P. Gaines, and M. M. P. Huso. 1997. Atlas of Oregon wildlife. Oregon State University Press, Corvallis, Oregon.
- Csuti, T.A. Oneil, M.M. Shaughnessy, E.P. Gaines E.P., and J.C. Hak. 2001. Atlas of Oregon Wildlife Distribution, Habitat, and Natural History. Oregon State University, Corvallis Oregon. 525 pp.
- Davis, Sara, Stephen Hamilton, and Michele Punke 2017 Cultural Resource Investigations for the Proposed La Pine-State Park Transmission Line, Deschutes County Oregon. Submitted by Historical Research Associates, Inc. On file at the Deschutes National Forest, Bend-Fort Rock District, Bend, Oregon.
- DeGraaf, Richard M., Virgil E. Scott, R.H. Hamre, Liz Ernst, and Stanley H. Anderson. 1991. Forest and rangeland birds of the united states natural history and habitat use. U.S. Department of Agriculture, Forest Service, Agriculture Handbook 688. Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/birds/forest/index.htm> (Version 03NOV98).
- DeGraaf, R. M., Rappole, J. H. 1995. Neotropical migratory birds: natural history, distribution, and population change. Comstock Publishing Associates. Cornell University Press, Ithaca, New York.
- Edelman, F. and J. Copeland. 1999. Wolverine distribution in the northwestern United States and a survey in the Seven Devils mountains of Idaho. Northwest Science, Vol. 73, No. 4: 295-300.
- Endangered Species Act of 1973. 16 U.S.C. §§ 1531 et seq. (2002), available at <http://endangered.fws.gov/esa.html>
- Federal Register. 2001. Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds. 66 FR 3853, January 17, 2001.
- Ferguson, Sue. 2001. Climatic Variability in Eastern Oregon and Washington. Northwest Science. Special Issue, 75: 62-69.
- Filip, Gregory; Barger, Michael; Bronson, Joshua; Chadwick, Kristen; Collins, Rick; Goodrich, Betsy; Kearns, Holly; McWilliams, Michael; Oblinger, Brent; Omdal, Daniel; Ramsey, Amy; Saavendra, Angel.

- Froehlich, H.A. 1979. Soil compaction from logging equipment: Effects on growth of young ponderosa pine. *Journal of Soil and Water Conservation* 34(6): 276-278.
- Graham, R.T., A.E. Harvey, M.F. Jurgensen, T.B. Jain, J.R. Tonn, and D.S. Page-Dumroese. 1994. Managing coarse woody debris in forests of the Rocky Mountains. Intermountain Research Station, Research Paper INT-RP-477. Ogden, UT: U.S. Department of Agriculture, Forest Service. 12 pp.
- Goheen, E.M., Willhite, E.A. 2006. Field Guide to Common Diseases and Insect Pests of Oregon and Washington Conifers. R6-NR-FID-PR-01-06. Portland, OR: USDA Forest Service, Pacific Northwest Region. 327 p.
- Harmon, M.E., J.F. Franklin, F.J. Swanson (and others). 1986. Ecology of Coarse Woody Debris Temperate Ecosystems. In *Advances in Ecological Research*, vol. 15. New York: Academic Press: pp 133-302.
- Hawksworth, Frank, G., Johnson, David, W. 1989. Biology and Management of Dwarf Mistletoe in Lodgepole Pine in the Rocky Mountains. General Technical Report RM-169. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 38 p.
- Hinchliff, J. 1996. An Atlas of Oregon Butterflies. The Evergreen Aurelians. Corvallis OR. NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1 NatureServe, Arlington, VA. Available at <http://www.natureserve.org/explorer>
- Hornocker, M.G. and H.S. Hash. 1981. Ecology of the wolverine in northwestern Montana. *Can. J. Zool.* 59:1286-1301.
- Hopkins, Bill. 1992. Region 6f Interim Old Growth Definitions for Lodgepole Pine Series.
- Ingram, R. 1973. Wolverine, fisher, and marten in central Oregon. Oregon State Game Commission Report No. 73-2.
- Johnsgard, P. A., 1990. Hawks, eagles, & falcons of North America. p.260-268. Washington and London: Smithsonian Institution Press.
- Kennedy, PL. 2003. Northern goshawk: A technical conservation assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project.
- Laing, LE., and S. W. Howes. 1983. Detrimental Soil Compaction Resulting from a Feller-Buncher and Rubber-Tired Skidder Timber Harvest Operation: A Case Study. In: J.D. Lousier and G.W. Still (eds.): *Degradation of Forest Lands, "Forest Soils at Risk"*. Proceedings of the 10th BC Soil Science Workshop, Vancouver, B.C., February 1986. pp. 191-195.
- Larsen, D.M., 1976. Soil Resource Inventory, Deschutes National Forest. Pacific Northwest Region, U.S. Department of Agriculture, Forest Service.
- La Sorte, F. A., R. W. Mannan, R. T. Reynolds, and T. G. Grubb. 2004. Habitat associations of sympatric red-tailed hawks and northern goshawks on the Kaibab Plateau.. *Journal of Wildlife Management* 68:307–317.
- Lighthall, K. (2015). Greater La Pine Community Wildfire Protection Plan. Project Wildfire.
- Marshall, D.B., M.G. Hunter, and A.L. Contreras. 2006. Birds of Oregon: a general reference. Oregon State University Press, Corvallis, OR. 768 pp.
- Maxwell, W.G., Ward, F.R. (1976). USDA Forest Service General Technical Report PNW-52. Photo Series for Quantifying Forest Residues in the: Ponderosa Pine Type, Ponderosa Pine and Associated Species Type, Lodgepole Pine Type.
- Memorandum of Understanding between the U.S. Department of Agriculture, Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds. (December 08, 2008).
- Mellen-McLean, Kim, Bruce G. Marcot, Janet L. Ohmann, Karen Waddell, Susan A. Livingston, Elizabeth A. Willhite, Bruce B. Hostetler, Catherine Ogden, and Tina Dreisbach. 2012. DecAID, the decayed wood advisor for managing snags, partially dead trees, and down wood for biodiversity in forests of Washington and Oregon. Version 2.20. USDA Forest Service, Pacific Northwest Region and Pacific Northwest Research Station; USDI

- Fish and Wildlife Service, Oregon State Office; Portland, Oregon.
<http://www.fs.fed.us/r6/nr/wildlife/decaid/index.shtml>
- Migratory Bird Treaty Act. 1918. 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended.
- Miller, Jeffrey C. and Paul C. Hammond. 2007. Butterflies and Moths of Pacific Northwest Forests and Woodlands: Rare, Endangered, and Management Sensitive Species. Forest Health Technology Team, Technology Transfer Species Identification. USDA Forest Service Publication FHTET-2006-07.
- National Cooperative Highway Research Program, Report #741, 2013. "Evaluation of Methodologies for Visual Impact Assessments"
- National Wildfire Coordinating Group. (2012, July). NWCG Website. Retrieved June 25, 2014, from NWCG Glossary of Wildland Fire Terminology, PMS 205: <http://www.nwcg.gov/pms/pubs/glossary/glossary.htm>
- NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1 NatureServe, Arlington, VA. Available at <http://www.natureserve.org/explorer>
- NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>.
- NWCG. (2012, July). Glossary of Wildland Fire Terminology. Retrieved from National Wildfire Coordinating Group: <http://www.nwcg.gov/pms/pubs/glossary/index.htm>
- Oregon Department of Fish and Wildlife. 2003. Oregon's elk management plan. Oregon Department of Fish and Wildlife, Portland, Oregon, USA.
- O'Hara, Kevin. 1996. A Structural Classification for Inland Northwest Forest Vegetation. Western Journal of Applied Forestry. Vol 11 No 3.
- Oregon Health Authority and Oregon Department of Forestry. (2014). Impacts of the Pole Creek Wildfire on Fish, Wildlife and Aquatic Habitat, and on Public Health. Salem, OR: Oregon Health Authority. Retrieved from http://www.oregon.gov/odf/docs/20140210_HB3109_ODF-OHA_ImpactsOfPoleCreekWildfire2012_Report.pdf
- Preston, C. R. 1980. Differential perch site selection by color morphs of the red-tailed hawk (*Buteo jamaicensis*). The Auk, Vol. 97, No. 4 (Oct. 1980): 782-789.
- PRISM Climate Group, Oregon State University. 2012. <http://prism.oregonstate.edu>. 30-year Normals, accessed 7 Aug 2012.
- Pyle, R.M. 2002. The Butterflies of Cascadia, A Field Guide to All the Species of Washington, Oregon, and Surrounding Territories. Seattle Audubon Society, Seattle, WA.
- Reineke, L.H. 1933. Perfecting a Stand-Density Index for Even-Aged Forests. Journal of Agricultural Research. Vol. 46, No. 7. Washington, D.C.: U.S. Department of Agriculture, Forest Service, California Forest Experiment Station. 12p.
- Reynolds, R. T., E. C. Meslow, and H. M. Wight. 1982. Nesting habits of coexisting accipiter in Oregon. Journal of Wildlife Management 46:124-31.
- Reynolds, R. T. 1989. Accipiters. Pp. 92-101 in Proceedings of the western raptor management symposium and workshop (B. A. Giron Pendleton, Ed.). Scientific and Technical Series No. 12, Institute for Wildlife Research and National Wildlife Federation, Washington, D. C.
- Reynolds, RT et al. 1992. Management Recommendations for the northern goshawk in the Southwestern United States. General Technical Report RM-217. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station and Southwestern Region. Fort Collins, CO. 90 pp.
- Rose, C. L., B. G. Marcot, T. K. Mellen, J. L. Ohmann, K. L. Waddell, D.L. Lindley, and B. Schreiber. 2001. Decaying wood in Pacific Northwest forests: concepts and tools for habitat management. Pp. 580-623 in: D.H. Johnson and T. A. O'Neil, ed. Wildlife-habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis OR. Rose et al. 2001

- State Historic Preservation Office (SHPO) 2016 Guidelines for Conducting Field Archaeology in Oregon. Available online at http://www.oregon.gov/oprd/HCD/ARCH/docs/Master_Final_FieldGuidelines_January2016.pdf
- Simpson, Michael. 2007. Forested Plant Associations of the Oregon East Cascades. USDA Forest Service. Pacific Northwest Region. R6-NR-ECOL-TO-03-2007.
- Tesky, Julie L. 1994. *Buteo jamaicensis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2011, May 25].
- Timmosi, I.C. and R. H. Barrett. 1995. Habitat suitability models for the use with ARC/INFO: red-tailed hawk. California Department of Fish and Game, CWHR Program, Sacramento, CA. CWHR Technical Report No. 19 25 pp.
2016. Field Guide for Danger-Tree Identification and Response along Forest Roads and Work Sites in Oregon and Washington. R6-NR-TP-021-2016. USDA Forest Health Protection. Pacific Northwest Region, Portland, OR. 120 p.
- USDA, 2012. National Best Management Practices for Water Quality Management on National Forest System Lands. Volume 1: National Core BMP Technical Guide.
- USDA, FSM 1998. Forest Service Manual 2520, Soil Quality Standards. Forest Service, Region 6. R-6 Supplement 2520.98-1.
- USDA, Forest Service, 1990. Land and Resource Management Plan, Deschutes National Forest Final Environmental Impact Statement.
- USDA FS. 1994b. Deschutes National Forest Wildlife Tree and Log Implementation Strategy. Bend, OR. USDA Forest Service, Pacific Northwest Region.
- USDA Forest Service, Region 6. 1995. Revised Environmental Assessment for the Continuation of Interim Management Direction Establishing Riparian Ecosystem and Wildlife Standards for Timber Sales.
- USDA. Forest Service 1995, 1996, 1997, 1999, 2005, 2010. Deschutes National Forest, Soil Monitoring Reports. Unpublished soil monitoring reports on file at the Deschutes National Forest Supervisor's Office, Bend, OR.
- USDA Forest Service, 1996. Landscape Aesthetics, A Handbook for Scenery Management
- USDA Forest Service. 2001. Guide to Noxious Weed Prevention Practices , July 5, 2001
- USDA. 2004. Programmatic Agreement among USDA Forest Service Pacific Northwest Region (Region 6), the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Officer Regarding Cultural Resource Management in the State of Oregon by the USDA Forest Service. On file at the Deschutes National Forest, Bend-Fort Rock District, Bend Oregon.
- USDA, Forest Service. 2005 Region 6 Record of Decision, Preventing and Managing Invasive Plants, Oct. 2005
- USDA FS 2012. Management Indicator Species Assessment. Deschutes National Forest. Bend, OR. USDA Forest Service, Pacific Northwest Region.
- USDA Forest Service. 2012. National Best Management Practices for Water Quality Management on National Forest System Lands. Volume 1: National Core BMP Technical Guide.
- USDA Forest Service, 2005. Long Prairie Mistletoe Reduction Environmental Assessment. Bend-Fort Rock Ranger District, Bend, OR.
- USDA Forest Service, 2012. Ogden Vegetation Management Project and Forest Plan Amendments. Bend-Fort Rock Ranger District, Bend, OR.
- USDA Forest Service, 2015. Flat Vegetation Management Project Environmental Assessment. Bend-Fort Rock Ranger District, Bend, OR.

- USDA. 2014. Joint Aquatic and Terrestrial Programmatic Biological Assessment for Federal Lands within the Deschutes and John Day River Basin's Administered by the Deschutes and Ochoco National Forests.
- USDA 2012. Natural Resources Conservation Service, Soil Quality/Soil Health webpage. <http://soils.usda.gov/sqi/>
- U.S. Environmental Protection Agency (1998). Federal Clean Air Act.
- USDI Fish and Wildlife Service (USFWS). 1987. Northern Rocky Mountain Wolf Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado, 119 pp.
- USDI FWS. 2008. Birds of Conservation Concern. U.S. Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management. Arlington, VA. <http://www.fws.gov/migratorybirds>
- Wahl, T. R., B. Tweit, and S. G. Mlodinow, editors. 2005. Birds of Washington: status and distribution. Corvallis, OR, U.S.A Oregon State Univ. Press. 436 pp.
- Wightman, C.S., V.A. Saab, C. Forristal, K. Mellen-McClean, and A. Markus. 2010. White-headed woodpecker nesting ecology after wildfire. *Journal of Wildlife Management* 74(5): 1098-1106.
- Wisdom, M.J., R.S. Holthausen, B.C. Wales, C.D. Hargis, V.A. Saab, D.C. Lee, W.J. Hann, T.D. Rich, M.M. Rowland, W.J. Murphy, M.R. Eames. 2000. Source habitats for terrestrial vertebrates of focus in the interior Columbia basin: broad-scale trends and management implications. Gen. Tech. Rep. PNW-GTR-485. Portland, OR. USDA Forest Service, Pacific Northwest Research Station. 3 Vol.
- Van Pelt, R. 2008. Identifying Old Trees and Forests in Eastern Washington. Washington State Department of Natural Resources, Olympia, WA. 166 p.
- Volland, Leonard A. 1985. Plant associations of the central Oregon Pumice zone. USDA Forest Service. Pacific Northwest Region. R6-ECOL-104-1985. 138 p.
- Werner, E. (2017). Silviculture Specialist Report. MEC ROW 115kv Substation to State Rec Road Transmission Line planning project. Internal Report.
- Zaborske, R.R. 1989. Soil Compaction on a Mechanized Timber Harvest Operation in Eastern Oregon. M.S. Thesis, Department of Forest Engineering, Oregon State University, Corvallis, OR. 89 pp.